THE IMPACT OF THE MILLENNIALS GENERATION ON UNIVERSITY LIBRARY SERVICE PROVISION

by

Stephen Tapril

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Abstract

This study investigated the expectations of Millennials in relation to academic library service provision, and compared these with the skills and competencies of subject librarians, to identify gaps in service delivery and present strategies by which these gaps could be addressed. The research took place at a time when the role, and perceived benefit, of libraries and information professionals were under scrutiny during a climate of budget cuts and in view of increased university tuition fees.

Four UK universities participated in a study using qualitative and quantitative methods. A web-based survey of Millennials, based on the LibQUAL+ measurement instrument, identified generational characteristics and service expectations from 410 respondents. Online focus groups with 13 Millennials were used to explore trends and issues identified from the survey data. Finally, 53 subject librarians at the same four institutions took part in a web-based survey to identify their skills, competencies, roles and responsibilities and these were compared with student expectations.

Findings illustrated that the sample of Millennials were 'wired' to the networked world, that technology forms an integral part of their study technique, and that it has shaped their outlook, behaviour and expectations. The role of the subject librarian has evolved and subject librarians are increasingly required to provide learner support – often in virtual or electronic environments. They have acquired the skills to do so primarily through experiential, on-the-job, development.

Three models were developed to illustrate a spiral of heightening and widening student expectations driven by technology use; an emergent paradigm of education that has been shaped by technology; and the skillsets required by next-generation blended librarians positioned to provide effective learner support to Millennials.

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1   Introduction

This chapter introduces the research project, provides the context for the study, presents the research questions and associated objectives, and describes the structure of the thesis.

This research project investigated the expectations of a peer group of 18-24 year old undergraduates in relation to academic library service provision at four UK universities, and compared these with the competencies and skills of subject librarians working at those universities. Data were collected from academic libraries in two regions of England and inquiry was based on the experiences of human participants. A triangulated mixed methodology, which formed part of a pragmatic approach, was used to draw together both qualitative and quantitative data in an effort to reduce the limitations inherent to each as a standalone approach and to produce an holistic overview of the social phenomena which were explored.

1.1   Background to the study

This section of the chapter establishes the rationale for undertaking the research project, describes the short-falls of existing research in this area, and highlights continuing concerns which need to be addressed.

1.1.1   Project rationale

The "Millennials Generation", a cohort of individuals whose outlook, attitude and expectations are shaped by a plethora of socio-economic factors, is beginning to garner recognition within the United Kingdom. This study contributes to an improved understanding about 18 to 24 year old undergraduates, who are identified as members of this peer group, by contextualising their generational identity and characteristics in order to

better inform library services and information professionals in the process of tailoring services to user needs. The study explores the competencies and skills of information professionals and how these relate to the expectations of service provision among Millennials. Findings from the study, which focuses on Millennials, information professionals and library services within the United Kingdom, may also be relevant to the global field of literature examining these issues which is currently dominated by studies from the United States of America, Canada and Australia.

The audience for this research is likely to include professional library staff and managers sharing an interest in continued professional staff and service development; educators in the higher education sector and higher education theorists; and those managing curricula at library schools. Although the project takes place in the context of the United Kingdom the findings of this study may also prove relevant to on-going international research, particularly in the USA, Canada and Australia.

Library services are effective only if they meet the needs of their users. The need to tailor, change and adapt services to the new intake of students with different learning styles is essential for maintaining a relevant and valuable library service. This research project was therefore designed to investigate whether generational theory has a role to play in understanding whether the academic library service needs of a cohort of undergraduate students are being met, and whether the skills of information professionals delivering those services are in tune with user requirements. Generational theory suggests that the social context of a peer group may influence outlook, behaviour, and expectations (Howe & Strauss, 2000). The needs of undergraduate academic library users cannot therefore be truly understood without first developing an appreciation for the social context of their wider peer group. An exploration of how the so-called 'Millennials Generation' can be characterised was therefore deemed to be a necessary basis for any subsequent investigation.

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The project is important because it explores the phenomenon of on-going change within library service provision at a time when the role, and perceived benefit, of libraries and information professionals are increasingly scrutinised in a climate of budget cuts. The project was conceived at a time when staff cuts were nationally publicised, such as those at the University of Bangor (Curtis, 2005), and picked up as a key battleground issue for the University and College Union (UCU, formerly the Association of University Teachers). This issue remains an on-going concern: a financial crisis which began in 2007, whose effects are still being felt several years later, has resulted in significant funding cuts within the Higher Education sector as a whole (e.g. Browne et al., 2011; Collins, 2010; Garner, 2010; Higher Education Funding Council for England (HEFCE), 2010; Richardson, 2010) which naturally require that academic library services, more than ever before, demonstrate value for money and real world benefit supported by a skilled and adaptable profession.

High profile public library service cuts have already garnered media attention, such as the highly publicised plans to axe services and jobs in Wirral (CILIP, 2009) which resulted in central government intervention (DCMS, 2009), and the Higher Education sector is far from immune. Net expenditure on academic library services increased over a ten year period, to £550m in 2007/8, yet still amounts to only 2.1% of total university expenditure and is not, therefore, in line with increases in the overall income and expenditure of UK universities (RIN, 2010). This suggests that academic libraries have already been dealing with the need to make cost savings.

Nevertheless the sector faces rising resource costs and the financial implications of sustaining changing services (such as 24 hour opening). UK respondents to an international survey conducted by the Centre for Information Behaviour and the Evaluation of Research (CIBER) (2009) indicated that 36% of UK information professionals observed budget cuts, and 36% had experienced a standstill budget between 2009 and 2010 (RIN, 2010), and with the picture looking less positive in two years' time library directors will be required "to look radically at the kinds and the levels of the

service that they can provide in support of their universities' missions" (RIN, 2010:8). The University and College Union (UCU) has been, perhaps, more precise in how library directors may do so, warning that up to 22,500 jobs could be lost within the Higher Education sector, as a whole, if the 25% funding cut for universities is realised by government, and more specifically that "...another knock-on effect [of the cuts] would be a huge reduction in vital support services, such as libraries..." (UCU, 2010).

The scale of cuts requires that information professionals consider whether to sustain existing kinds, and levels, of services and whether to develop new services to meet new needs (RIN, 2010). An investigation into the performance of, and perceived satisfaction with, academic library services in the context of the generational identity, outlook and expectations of a current cohort of undergraduate students, therefore remains relevant.

The term 'Millennials Generation' emerged from a poll conducted by ABC News (ABC News, 1997) and became a widely accepted label by which the peer group has become collectively known. Howe and Strauss (2000), and Holliday and Li (2004), have defined this generation as a cohort of individuals born between 1982 and 2000 but within current literature there is no consensus on when, precisely, this generation is located. Howe and Strauss (2000) assert that generational characteristics are shaped by world events and that it is essential to move beyond birth statistics to an exploration of the socio-economic context of a peer group in order to truly understand generational change.

The outlook of the Baby Boom Generation was influenced by the 1969 moon landing and politically motivated by the peak of the Cold War, for example, whilst Generation X bore witness to the AIDS epidemic, the emergence of a punk rock and drug culture, and widespread industrial action (Howe & Strauss, 2000). The childhood of those within the so-called 'Millennials Generation', in contrast, saw the destruction of political and social barriers: the fall of the Berlin Wall, the ending of apartheid in South Africa, and the advent of the Internet (Howe & Strauss, 2000).

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Yet whilst the trends and characteristics of a new generation of learners have been explored in existing research there seems little in the way of empirical evidence: a reliance on media-based surveys and polls is unhelpful because the quality of research can be questioned. Sampling strategies lack integrity and rigour and marketing influences affect survey outcomes. It is also important to note that the conclusions reached by recent research are those reached by researchers ascribing an identity to a generation to which they do not belong; Howe and Strauss (2000) highlight this risk despite their own investigations. They anecdotally observe that adults, shocked at the language of 15 year olds and blaming cultural artefacts such as films, computer games and music for this, fail to realise that such products are written by 30 year olds, produced by 50 year olds and appear on the portfolios of companies run by 70 year olds; in effect ignoring the fact that the youth culture of the Millennials Generation has been shaped by the Baby Boom Generation and Generation X. Any examination of the identity, and characteristics, of Millennials will certainly be influenced by the generational background of the researcher. This does not invalidate conclusions reached by recent research but it is worth noting as a potential limitation.

To combat this limitation some research has been undertaken which examines *self*-identity among Millennials rather than prescribing identity or characteristics by observation. Filiciak (2003) writes about social interactions and the rules of online gaming and compares the similarity of these to real life social interactions and rules. Rehak (2003) confirms the importance of 'avatar' in online environments as a way in which Millennials not only see themselves but how they wish others to view them within a given environment. Whilst Rehak (2003) and Filiciak (2003) do not refer to Millennials *per se*, and concentrate only on the role of video games in shaping social identity, their research is useful in providing a picture of the identity of Millennials who have been described as the 'digital natives' (Prensky, 2001) who dwell within these online gaming and social networking environments.

The role of video games has also been explored in relation to influences on learning preferences and behaviour. Gee (2003) argued that there are some 36 learning principles inherent to video games and concluded that these contribute to influencing the learning preferences of those who play them. The argument might also be contorted such that video games can be seen to meet the learning preferences of those who play them, therefore making the developmental relationship between game and game player a mutual one. Kirriemuir (2002) discusses the relationship between video games and digital libraries and the deployment of video games as a learning or instructional tool within an academic environment.

The use of games involving management of resources, or the need to filter information to make the most successful judgements, can be applied to the context of information retrieval skills and the research process within libraries. Herz (2001) identifies the social skills which players are required to use (and therefore develop), including collaboration, participatory design and feedback (90% of *The Sims* content, for example, is produced by the player population), and – again – raises the important issue of group identity. Yet these papers, whilst instrumental in providing an understanding of how education can learn and adapt to the learning preferences of Millennials, do not relate specifically to the academic library environment, nor do they appreciate the issue of whether information professionals are equipped with the necessary skills to successfully manage services which take into account these learning preferences.

An examination of the information-seeking behaviour of members of the so-called Millennials Generation is therefore a more relevant area to consider. The work of Holliday and Li (2004) has gone some way towards examining this behaviour within the academic library context. By applying the key characteristics of this peer group, highlighted by Howe and Strauss (2000), to the academic library environment they identified the need for reference librarians, in particular, to consider the necessities of change in response to the impact of the Internet on the search process. The study, as with the majority of psychology-based investigations into information seeking

behaviour, utilises a cognitive approach in order to understand this search behaviour, basing itself on Kuhlthau's Information Search Process (ISP) model (Kuhlthau, 1994). The conclusions are certainly helpful; Holliday and Li (2004) note that Millennials become frustrated with difficult searches, lack depth in preference for 'first and efficient' results, and seem unable to introduce their own thoughts into the research process when a packaged answer is unavailable.

The idea that librarians need to understand change in search behaviour among students and tailor reference services accordingly (raising the issues of collaboration between school and college (i.e. university) level teaching, and between information professionals and those teaching literacy within schools) is a valuable one asserted by Holliday and Li (2004). Their research can be compared with a more recent investigation by Heinström (2005) which also investigates the psychological aspects of information retrieval behaviour. Heinström's study uses a different approach by assessing the impact of personality rather than assuming a cognitive approach. A key conclusion reached is that surface study behaviour is linked to negative affectivity (nervousness, lack of confidence and so on). A comparison with Holliday and Li's (2004) work, in which Millennials were shown to have exhibited this study behaviour, might lead to an assumption that Millennials are also nervous and lack confidence in the information search process; yet this is in stark contrast to the view of Howe and Strauss (2000) in which Millennials are confident high achievers with a positive view of studying and learning. There is clearly still some confusion over the characteristics and identity of Millennials which needs to be addressed.

Another shortfall which can be observed within existing research which examines the Millennials Generation is the nature of its geographical focus. The majority of early studies emerged from, and are concentrated upon academic library services and college environments within the USA and Canada. Very little initial applied research had been undertaken in the United Kingdom at the time this research project was conceived. Since Millennials identify themselves, and are described within the literature, as a

global generation then it is important to add a UK dimension to the body of existing knowledge. Efforts have been made more recently to correct this (Brabazon, 2007; CIBER, 2008) but it is nevertheless the case that the understanding of generational theory and its impact on expectations of academic library service provision within the UK, and the empirical evidence obtained by UK-based research in this regard, is still behind that enjoyed within North America. This research project therefore aims to further assist in correcting this.

The performance, and quality, of academic library service provision has also been explored by existing research but on the whole neglects to consider the issue of generational theory as a catalyst for needing to adapt, and improve, service delivery to better meet the needs and expectations of library users. Koh (2003) suggests steps which libraries might take to ensure services meet the demands of this group of students, yet ultimately fails to consider why those demands exist. In this sense recent research is concerned primarily with symptoms rather than with acquiring an appreciation for the root cause. This is an outlook shared by Harley et al. (2001) who portray student behaviour within the context of consumerism, arguing that information-seeking behaviour is based primarily around short-term convenience rather than long-term understanding. They volunteer prescriptive steps which libraries need to take to 'cure' this, including the facilitation of critical thinking by improved and increased student-librarian interaction. Again, however, the underlying causes for this behaviour are still neglected.

Academic libraries, and information professionals, need to move away from disparaging or criticising the information-seeking behaviour among this generation of undergraduates, towards gaining an understanding of why that behaviour exists and how it might better be accommodated rather than corrected. Service delivery and performance will be more effective if information professionals truly understand why change is necessary and how best to go about it.

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These papers do address the key issues which contribute to this understanding but they do so incongruently. A collated and uniform approach which marries these issues together is necessary for an effective appreciation of the impact of this generation on library services. It is for this reason that this study has been designed and implemented.

1.1.2 The importance of considering generation

The need to understand generation identification – the grouping of individuals by commonality, most often age, but also shared social experiences – has historically been considered as a matter of course within advertising and marketing theory but less commonly within information science or library management. For corporate interests there are clear commercial gains to be had by doing so: the better tailored a product is to its intended consumer the more likely that consumer is to make the purchase (Cheng, 1999; Der Hovanesian, 1999; Duff, 1999; Ebenkamp, 1999a; Ebenkamp, 1999b; Ebenkamp, 1999c). Libraries must also endeavour to mimic this approach: to ultimately address the necessities of tailoring library services to users in order to ensure that those users are then positioned to, and indeed choose to, take advantage of what is on offer (Poll, 2005).

The issue of whether libraries are engaged, or are willing to engage, with various tools originating from the management sciences, by recognising the benefits of quantitative measures to assess service quality (Orr, 1973), has now been addressed. User needs analyses are an already established method of aligning service provision to the requirements of service users, ultimately with a view to establishing an effective library service. Such analyses "have the potential to inform technical, pedagogical and institutional policy and decision making" by way of the wealth of information they provide which may be unseen by project/library staff (Markland et al., 2003:6), and recognition of this is evidenced within the inherent and fundamental goal towards which various efforts are focused (e.g. Parasuraman et al., 1985; Parasuraman et al., 1988; Cuthbert, 1996).

However, whilst information professionals have adopted the methods of the management sciences, the focus on service quality and performance still lacks the benefits of understanding social context which generational and marketing theory propound. Whilst there are indeed limitations with the current practice of generational theory, such as a lack of rigour in methodology, it is still important to acknowledge the strengths of this field in establishing the context of a population within a study of this sort. Doing so can assist with understanding any commonality between individuals which extends beyond the simple surface variable of age to an appreciation for the desires, motivations and likely behaviour exhibited by individuals.

Whilst marketing research[1] may suffer from establishing generalisations from individuals based on one attribute (in this instance, age), the resulting picture – whilst general – is nevertheless still a useful one for catholic, contextual, application and should not be dismissed out of hand. Generational theory also suffers, perhaps, from its relatively recent emergence (perhaps prompted by Coupland on 'Generation-X' (1991)) and the experiences of prior generations are unfortunately less thoroughly documented. That is, we cannot be certain that some of what we say of the personality traits of 18-24 year-old Millennials is unique when we compare their broadly brush stroked characteristics with 18-24 year-olds plucked from previous generations.

Age identity may play more of a role than generational identity in some cases. This is simply because 'age' remains static whereas generations shift: today's 30 year olds belong to Generation-X but in ten years' time the new 30-year-olds will be Millennials (Mitchell, 2003). And, in relation to this, where generational attitudes have been documented the

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[1] Marketing research can be defined as "...the function that links the consumer, customer, and public to the marketer through information – information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research specifies the information required to address these issues, designs the method for collecting information, manages and implements the data collection process, analyzes the results, and communicates the findings and their implications" (American Marketing Association, 2004).

nature of the literature tends to be market-research orientated: as Howe and Strauss (2000) have observed the vast majority of "generational experts" are in fact youth marketers. Whilst this does not necessarily discredit findings, and perhaps emphasises further the need for academic libraries to consider employing the same tactics, it is worth noting that the focus of existing research may be on more commercial than purely investigative objectives.

Millennials form a peer group three times the size of Generation-X (Cheng, 1999). According to the US Census 2000, whilst Millennials do not outnumber other generations in *adult* population terms just yet, they do form 26% of the overall US population compared with just 17% from Generation-X and are only just outnumbered by the 28% Baby Boomer count (Mitchell, 2003). This was confirmed in the findings of the latest US Census in which 10-29 year olds formed 27.7% of the overall population (US Census Bureau, 2010). Within the United Kingdom the statistics are similar: according to the UK National Census in 2001[2] (Office of National Statistics, 2001) the population percentage of those aged between 0 and 19 (i.e. those born between 1981 and 2001 who fall within the Millennials grouping at the time) totals 25%, giving a peer group amounting to 14.7 million. In short, Millennials are the second largest generation in the United States and form one quarter of the UK population. By the time this group reaches adulthood they will outnumber Baby Boomers to earn themselves status as the most influential group in society not only for commercial but also public policy interests. They also account for a sizeable number of students within current higher education and the numbers of Millennials enrolling within the higher education system continue to increase (Office of National Statistics, 2004b; HESA, 2011).

Academic libraries can therefore ill afford to ignore both the likelihood and nature of the impact which this generation will have upon library policy and services particularly in the current economic climate. Libraries with an

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[2] Census data from the UK 2011 Census (Office of National Statistics, 2011) were not available at the time of writing.

understanding of the generational outlook, attitudes and behaviour of Millennials will be far better placed to offer valuable and relevant services and demonstrate value for money and relevance.

There are three areas which demonstrate how different social experiences and contexts lead to different values, understanding and therefore expectations. First, the obvious impact of age in determining attitude (and therefore behaviour) must be considered. Age should be given as much emphasis as race and gender (Mitchell, 2003).

Second, the influences of upbringing upon a generation should also be examined (including education, diversity, radical technological change, and cultural experiences). The impact of key historical events and the global context within which a generation ages are certain to affect the outlook of its members as much as their level of education and technological aptitude (Howe & Strauss, 2000).

Third, and finally, the personality traits which a given group of individuals exhibit should also be explored. These are no doubt influenced by upbringing and age but are influential enough to shape the expectations of individuals that they should be considered distinctly. Howe and Strauss (2000) also include *perceived* membership of a generation as a valid characteristic affecting behaviour and expectations. Whilst it is true that individuals may tailor their behaviour in a certain way to fit within given peer group it is not an objective enough means by which generational behaviour can be truly evaluated. This study will contribute to the field by developing a literature review which will subsequently address each of these areas in turn to provide an overall picture of the Millennials generation which will then provide a useful and necessary context to any subsequent fieldwork.

1.1.3 The generational 'location' of Millennials

Although a 'generation' is a society-wide peer group (Howe & Strauss, 2000) extending beyond a common age, it is nevertheless age which firstly helps us identify and define each generation. Caveats on generalisations reiterated, those born between or aged between certain years are generally recognised as belonging to the same group of (more likely than not) like-minded individuals. Whilst the notion is easy enough to understand, and while the existence of a new generation of students is generally accepted, there is still a considerable lack of consensus when it comes to the generational location – the pinpointing of a given generation's age group – of Millennials. Table 1.1 demonstrates this, showing starting years of 1970 through to 1982, to ending years of 1994 through to 2002.

Table 1.1. The generational location of Millennials.

Born between/from (years)	Source
1970 –	Storey (2005)
1977 –	Wolburg and Pokrywczynski (2001)
1977-1994	Gill (1999)
1977-1994	Mitchell (2003)
1979-1994	Duff (1999)
1979-1994	Kapner (1997)
1979-1994	Neuborne and Kerwin (1999)
1982-2002	Howe and Strauss (2000)
1982-2002	Holliday and Li (2004)
1981-2000	Goldgehn (2004)
1981-2003	Merritt (2003)

The reason for this lack of consensus is understandable. Howe and Strauss (2000) have noted that generations can be 'short' or 'long' depending upon the experiences of its members. The average length is around 20 to 21 years, from birth to adulthood, but some may be as short as 17 or as long as 24 years (Howe & Strauss, 2000). Divergence within research along the key themes which define generation as noted earlier may also explain the discrepancy. If research excludes an examination of personality traits, for example, then the age boundaries within which individuals are grouped by commonality will almost certainly differ from research which does not (and likewise for an examination of key cultural events).

In any case if we accept Howe and Strauss's (2000) assertion that the years between birth and adulthood determine outlook and behaviour, we can at least assume that Millennials are those who experienced this period from the 1980s through to the 2000s. We can attempt to be more specific by asserting that since Millennials were first identified as the new intake of current undergraduates (therefore aged 18-20) by research beginning around 1999-2000 (suggesting the generation had been identified at that point), the start year is therefore most likely to be around 1981 or 1982. For the purposes of this research the project will, along with Holliday and Li (2004), adopt the years given by Howe and Strauss (2000) though with the start year identified by Goldgehn (2004) of 1981. The age bracket for Millennials will be assumed as 1981-2002. The logic is perhaps somewhat spurious but it is important to note that the specifics of years are less important than the attitudes and behaviour of this generation which we are seeking to understand in order to identify how academic libraries, and subject librarians, can be better placed to cater to the needs of undergraduate 'Millennials'.

1.2 Perspective of the researcher

This researcher was a qualified academic library practitioner. His career began with a succession of posts at Oxford University Library Services (OULS), now known as Bodleian Libraries, which is composed of 40 major research, faculty, departmental and other libraries with a combined collection of more than 11 million printed items. During this time he obtained a professional qualification accredited by the Chartered Institute of Library & Information Professionals (CILIP) from University College, London. After three years he moved to Liverpool John Moores University to manage a team of staff and library operations during weekend opening hours, and began this research project at the University of Sheffield. He has since moved from academic library practice to central university student administration at the University of Liverpool.

His experience in academic libraries exposed him both to 'back room' technical, and to 'front line' customer-facing, roles and with that the potential disparity between service delivery and staff competencies and user needs and customer satisfaction. This contributed to his desire to better understand this relationship in order to conceive of means for developing a successful library service. Exposure to the potential limitations of existing library-based IT solutions, coupled with a belief that library users were placing increasing demands upon staff to provide, and support, IT-based solutions within the library setting, led to his investigations into the role of age as a factor in precipitating user needs and expectations. Having been born in 1981, his own age is a contributing factor in directing an academic exploration of these issues.

This background has certainly influenced and informed both the course of this research project, and also the analysis and interpretation of data gathered during fieldwork, and inevitably researcher bias will exist. Steps taken to overcome this bias include the pilot testing of each strand of fieldwork in order to ensure that research instruments are as objective as possible with a design purposefully targeted at the needs of the research project. A mixed methods approach which makes use of triangulated quantitative as well as qualitative data also bolsters the validity of findings and minimises the impact that follows naturally from researcher interpretation of qualitative findings alone. A comprehensive literature review which seeks to examine key issues from all perspectives is also a fundamental requirement and offsets researcher bias in the first instance by directing the nature of the inquiry. Finally, the approval process and upgrade requirements at the University of Sheffield also work towards diminishing the risks of researcher bias by subjecting the project to independent review.

1.3   Aims and objectives

The overall aim of the project is to investigate how the expectations and experiences of the so-called Millennial generation may impact on library services and the skills of librarians, and to devise strategies for meeting the needs identified.

There are three research questions which help form the line of enquiry within this project, each supported by sub questions in order to produce a more comprehensive answer.

RQ1. Who are Millennials and how can they be characterised?

The first research question is designed to describe and contextualise the target population for this study by first exploring the origins of the term 'Millennials Generation' and second by identifying those it describes. To support this process it is also necessary to ask: what are the values, traits, and characteristics of Millennials, and what information seeking behaviours do they exhibit?

RQ2. How are Millennials served by libraries and librarians?

The second research question naturally follows from the first; once Millennials have been described and the target population for the study is placed in context, then it is necessary to consider how this peer group is already served by academic libraries and those subject librarians supporting the services they are currently being offered. Specifically: how effective are existing academic library services in catering to the expectations of Millennials, and how might library services adapt provision to remedy any deficiencies or to tailor delivery specifically to the needs of this peer group?

RQ3. Is there an increased demand upon subject librarians to undertake new or increased responsibilities and what are the implications for competency requirements?

The third research question seeks to consider how the role of subject librarians has, or may have, changed and whether a shift in the nature of enquiry and learner support have taken place: if so, what trends can be identified? How are subject librarians now required to support the needs of the Millennials Generation, and what competencies do they require in order to satisfy customer expectations? This question is designed to produce answers which will ultimately demonstrate – if necessary – how subject librarians might refine or develop their existing skill set to suit the expectations of a new generation of undergraduate population.

A set of objectives were designed to operationalise the collection and analysis of data to effectively answer these research questions:

i)   To identify the defining characteristics of the Millennial Generation (RQ1);

ii)   To explore the expectations for, and perceptions of, library service provision among members of the Millennials Generation (RQ2/RQ3);

iii) To consider the strengths and weaknesses of competencies and skills currently held by subject/liaison librarians and how these relate to the expectations of service provision among Millennials (RQ2/RQ3);

iv)   To consider strategies by which potential gaps in service provision or professional competencies might be addressed (RQ2/RQ3).

1.4   Definitions of key terms

There are several terms or phrases used within the thesis which require initial clarification. Table 1.2 provides a glossary of these key terms and phrases.

Table 1.2. Terms used in the thesis.

Term or phrase	Definition
Academic library/libraries	"A library that is an integral part of a college, university, or other institution of postsecondary education, administered to meet the information and research needs of its students, faculty, and staff" (Reitz, 2006).
Affect of service	The human dimension of academic library service quality, focusing on the effectiveness of library staff, defined by ARL (2009) within the LibQUAL+ standardised measurement instrument. This encompasses staff empathy, willingness to help, and competency.
Baby Boom Generation	ALSO Baby Boomers. Individuals generally accepted to have been born sometime between 1946 and 1965 (Schuman & Scott, 1981; US Census Bureau, 2006). The Baby Boom Generation are currently the largest peer group and exhibit a liberal, individualistic and independent outlook. Because of its size, the Baby Boom Generation enjoy the largest influence on American economy and culture (Mitchell, 2003).
E-learning	"Any technologically mediated learning using computers, whether in a face-to-face classroom setting or from distance learning" (University of South Dakota in Littlejohn, 2005:73).
Generation X	ALSO Xers. Generation-X is comprised of individuals generally accepted to have been born sometime between 1965 and 1982 (Coupland, 1991; Howe & Strauss, 2000). Generation-X is small compared to other peer groups and has been labelled historically as sceptical and anti-authoritarian (Mitchell, 2003).
Information control	The ease with which information can be found, in a format of the library user's choosing, in an independent and autonomous way, defined by ARL (2009) within the LibQUAL+ standardised measurement instrument. This encompasses the availability of printed and electronic materials.
Information literacy	"...knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner" (CILIP, 2004). An information literate individual holds the necessary skills and competencies to understand: a need for information; the resources available; how to find information; the need to evaluate results; how to work with or exploit results; ethics and responsibility of use; how to communicate or share your findings; and how to manage your findings (CILIP, 2004).
Instructional technologist	ALSO learning technologist, educational technologist. Originating in the US, the term refers to a role in which appropriate technologies are matched to, and academic staff are assisted with effective use of technologies for, teaching. Instructional technologists are "experts in understanding how to use technology tools to enhance the teaching and learning process" (Bell & Shank, 2007:2).

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JISC	Joint Information Systems Committee. "JISC is an independent advisory body that works with further and higher education by providing strategic guidance, advice and opportunities to use ICT to support learning, teaching, research and administration." (JISC, 2010).
LibQUAL+	Based on the earlier SERVQUAL instrument, LibQUAL+ is a measurement instrument used by libraries "to solicit, track, understand, and act upon users' opinions of service quality" (ARL, 2010).
Library as place	The physical environment of the academic library as a place for individual or group study and as a place of inspiration, defined by ARL (2009) within the LibQUAL+ standardised measurement instrument.
Millennials Generation	ALSO Millennials, Generation Y, NetGen. Individuals born between the early 1980s and the early 2000s whose outlook, expectations, and behaviour have been shaped by various socio-economic factors (Howe & Strauss, 2000).
SCONUL	Society of College, National and University Libraries. All universities in the United Kingdom and Ireland are SCONUL members. SCONUL aims "to promote the sharing and development of good practice; to influence policy makers and encourage debate; to raise the profile of higher education and national libraries" (SCONUL, 2007).
Self service	"Library functions that can be initiated, controlled, and/or executed by the patron [i.e. user] without the assistance of library staff, including self-checkout, patron-initiated interlibrary loan service, and online catalogs that allow users to view their own patron records, place holds, renew items on loan, etc. *Synonymous with disintermediated service.*" (Reitz, 2006).
Subject librarian	ALSO liaison librarian, reference librarian (esp. USA). "A librarian qualified by virtue of specialized knowledge and experience to select materials and provide bibliographic instruction and reference services to users in a specific subject area or academic discipline (or subdiscipline). In academic libraries, subject specialists often hold a second master's degree in their field of specialization. Also refers to a librarian trained in subject analysis." (Reitz, 2006).
User	ALSO patron (esp. USA/Canada), customer. "Any person who uses the resources and services of a library, not necessarily a registered borrower." (Reitz, 2006).
Virtual learning environments (VLEs)	Known as learning management systems or course management systems in the US, VLEs are "...software systems that synthesise the functionality of computer-mediated communications software (e-mail, bulletin boards, newsgroups etc.) and online methods of delivering course materials (e.g. the WWW)" (Britain & Liber, 1999:3).

1.5   Thesis structure

There are seven chapters forming the thesis. This introductory chapter has established the context of the research project by highlighting the scope, rationale, background, research questions and the aim and objectives of the study.

A literature review, within Chapter Two, follows and contributes to an understanding of the Millennials Generation, current thinking in relation to the changing nature of library service provision and of service performance measurement, and the changing role of information professionals and the competencies which they require to adopt new roles and responsibilities.

Chapter Three describes the research methodology which guided the investigations undertaken by this study, including the selection, design and implementation of specific research methods used as part of the overall triangulated mixed-methods design, the limitations of certain methods, and the analysis techniques which were performed on data.

Chapters Four and Five present results and analysis of data obtained from three strands of fieldwork – a web-based survey of Millennials; focus groups with Millennials; and a web-based survey of information professionals. Findings from fieldwork undertaken with Millennials are presented in Chapter Four, and findings from fieldwork undertaken with information professionals are presented in Chapter Five.

Chapter Six then presents a comparative discussion of findings from all three strands of fieldwork by comparing, contrasting and, ultimately, synthesising findings from the fieldwork with findings from a review of the literature as part of the mixed-methods approach in order to address the research questions framed above.

Finally, Chapter Seven highlights the conclusions which have been reached following this investigation, how the study has contributed to the field, and outlines a set of recommendations, including for future research, in relation to the research questions.

Conclusions

This chapter has established the context to this research project by identifying gaps within current thinking and methods of investigation as well as the relevance of this study to current trends within the information profession. Key terms and phrases have been presented and defined, and the perspective of the researcher – and associated bias – has been described. The overall aim and objectives of this research project have been described within the context of the project background, following an elaboration of several research questions which subsequent fieldwork was designed to address.

The next chapter provides a review of literature and existing research in the key areas which this project is designed to address, with a view to assessing current thought and identifying where gaps in knowledge may exist or where consensus has been reached, with the overall intent being to inform the focus and design of this project's own methodology and fieldwork.

2   Literature Review

The literature review is divided into three sections. The first explores conclusions reached by generational theory about the so-called 'Millennials Generation', examining the context and characteristics which have been attributed within the literature to this peer group. Defining the Millennials Generation, the peer group whose impact is being explored within this study, provides the foundation on which this project is built as well as, in more practical terms, the basis on which subsequent fieldwork with Millennials can be conducted.

The second section examines the changing nature of academic librarianship and – more specifically – the role of subject librarians in order to consider how information professionals are engaging with the Millennials Generation. This section of the literature review was developed to refine and focus the scope of the project by linking the expectations which might be placed upon academic library services by Millennials with those who hold responsibility for delivering such services.

The third and final section of the literature review considers the question of how to ensure effective service provision, focusing on the definition of service quality, the value of standardised measurement instruments such as LibQUAL+ and Libra Survey, staff competency frameworks, and the affect of service. This section of the literature review guided subsequent fieldwork in this study, helping in part to determine appropriate research methods.

2.1 Defining the Millennials Generation

This section of the literature review first considers the origins of the term 'Millennials Generation', before exploring the context of this peer group (i.e. generation) – how generational theory determined it to be a distinct social cohort – and the characteristics which have been attributed to its members. It is important to raise a caveat at the outset which recognises that generational theory, by nature, tends to examine the commonality of a given peer group: it must be made clear that this is not the same as suggesting that all individuals within a particular peer group exhibit homogenous characteristics, values and behaviours.

The terms 'Millennials' and 'Millennial Generation' arise not from whimsy on the part of this researcher or others, but through self selected identification by those individuals considering themselves part of this generation. In an online poll conducted by ABC News the name 'Millennials' proved most popular, followed by 'don't label us' (ABC News, 1997). Some research has popularised other terms of reference for this peer group including 'Generation Y' (AdAge, 1993; Business Week, 1999; Goldgehn, 2004), 'Net Generation' (Tapscott, 1999; Rettie, R., 2002) and 'Echo Boom' (Alch, 2000). It is also important to recognise that, as Tapcott (1999) states, a term such as 'Generation Y' is unhelpful because it builds upon an existing label (Generation-X) and fails to uniquely identify a new independent peer group. A term such as 'Net Generation' better exemplifies the growth of new digital media with which this generation of individuals has grown up and which has contributed to shaping ideals and values. This is also a good reason why a label such as 'MTV Generation' (McLaurin Smith, 2004) is inappropriate since it addresses only one medium (and, in this case, one with declining influence, as this literature review will explain). For the purposes of this project the researcher feels it appropriate to use the label with which these individuals have themselves identified.

2.1.1 Context

Generational change is prompted in part by the emergence of a new cohort of individuals with differing values and a differing outlook to those held by the prior generation (Howe & Strauss, 2000). Individuals within such cohorts identify themselves as part of something 'new', and set trends for what is to follow: for example, between 1977 and 1981, Generation-X contributed to the fall in youth crime and teen pregnancy and pioneered economic optimism, higher educational ambitions and less risky career goals, setting the preconditions for the emergence of a new generation – the Millennials Generation (Howe & Strauss, 2000). This argument is rather subjective; it is unclear whether Generation-X, or their Baby Boomer parents, were responsible for establishing the preconditions for Millennials, particularly given that the literature tends to assert that Millennials have more in common with Baby Boomers when it comes to values and opinions than with Generation-X. That said, it is worth noting that new attitudes and opinions begin to emerge towards the end of one generation and the advent of the next, and that a shift in generational outlook does not happen overnight.

The advent of the 'Millennials Generation' is also attributed in part, within the literature, to world events which took place during the childhood of this peer group which it is argued contributed to a different social outlook and attitudes to previous generations. Oblinger (2003) noted that world events shaped the attitudes of Generation-X, who witnessed the emergence of AIDS, the protests of Tiananmen Square, the U.S. stock market crash, the Chernobyl nuclear accident, the Exxon Valdez oil disaster, and the Challenger space shuttle disaster. She argues that the cynicism and anti-authoritarian stereotypes of Generation-X were by-products of events which to this day remain unsolved or a challenge to society. Anti-nuclear campaigning continues, AIDS remains a killer, civil rights within China though improving are still restricted, and the Columbia shuttle disaster in 2003 was a stark reminder of the dangers of space exploration.

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In comparison, the *Class Survey of 2000* undertaken by Howe and Strauss (2000) identified ten events to which the so-called 'Millennials Generation' were exposed. They identified these moments as pivotal influences in shaping attitudes and outlook. They include: the Columbine shootings; the war in Kosovo; the Oklahoma City bombing; the death of Princess Diana; Clinton's impeachment; the trial of OJ Simpson, and the fall of the Berlin Wall, among others. They assert that two common themes are weaved through each of these: first, that the event describes or is the result of an injustice; and second, that in each case accountability was sought and as a consequence a positive outcome resulted from a tragedy or injustice. The influence of world events and upbringing on the personality traits of a given peer group should not be wholly discounted, though it is inappropriate and unfounded to assume that members of a peer group express particular values or outlooks based solely on childhood events.

As a generation Millennials are also among the most educated. Within the general trend of social progress the education of subsequent generations improves (at least by comprehensive numbers) and this applies to Millennials which gives them the status as the current most educated generation. By 2015, for example, the campus population in the United States is set to rise from 15 million to 22 million (Bernstein, 1999). The total number of higher education enrolments within the UK has also been steadily rising with an increase of 4% between 2007/08 and 2008/09 (HESA, 2010) and another 4% increase between 2008/09 and 2009/10 (HESA, 2011), with the total number standing at just under 2.5 million (HESA, 2011).

The economic circumstances within which a given peer group finds itself should also be considered for context. The GI Generation (those born prior to World War II, in which the majority served) suffered the harsh reality of the 1930s Depression, whilst Baby Boomers enjoyed a relatively prosperous economic revival throughout the 1950s and 1960s (Howe & Strauss, 2000). Generation-X faced the growing wealth gap, economic crises and stagflation of the 1980s and in comparison Millennials have emerged in

a period of relative economic prosperity during the 1990s (Howe & Strauss, 2000). Although the costs of education and housing are on the increase, this generation appears to have adapted by way of an emerging trend in which departure from the family home is postponed (Koss-Feder, 1998). Cheng (1999) and Goldgehn (2004) also observe the high spending power of this peer group, and according to Teenage Research Unlimited (in Merritt, 2003), teenagers spent some $155 billion in the United States in 2003 with an average weekly spending rate of $84, over half of which comes from a parental allowance of some form. Whilst it can be argued that every teenage peer group has high spending power regardless of generation (and indeed this is emphasised by the fact that the majority of discussion on generational identity comes from the youth marketing field), it is the combination of this high spending power with the sheer size of the Millennials group which makes the issue significant. Within the US some 66% of Millennials have savings accounts, 22% have checking (i.e. cheque book) accounts, 18% own stocks and bonds, and 8% have mutual funds at their disposal (Merritt, 2003).

2.1.2 Attitudes and expectations

It is difficult to assess the direct impact of an educated upbringing on generational outlook and attitudes, though Wolburg and Pokrywczynski (2001) hinted at this when they noted that Millennials are more likely than their Baby Boomer parents to remain single throughout their 20s and 30s, delaying parenting in order to focus on career. According to the Office of National Statistics (ONS) (2004a), some 79% of 16 year olds and 68% of 17 year olds within the UK elected to continue their education beyond the compulsory requirement. This suggests that the great emphasis placed on education throughout the childhood of Millennials (related in part to the idea of this generation being a 'wanted' and protected generation as discussed later) has contributed to a mind-set now responsible for a new generation of

students actively seeking educational (and career) achievement and who can be considered self-empowered to do so.

The impact of economic circumstance can be identified somewhat more readily, and explains a greater focus on career and financial flexibility than evidenced by previous generations. Koss-Feder (1998) notes that by staying within the family home Millennials are not only minimising expenses but also securing greater liquid asset availability for cars, clothes and other discretionary items. However, what the literature fails to address is the impact of brand loyalty, emerging from this spending power and financial security. With a high spending power and demonstrated brand loyalty (Goldgehn, 2004; Fishman, 1998), Millennials are used to finding, buying and owning the products they desire. In consideration of academic library service provision; whilst libraries are not in the business of retail, they do need to consider the ramifications of failing to market services in order to promote the library as a valuable resource. Millennials are financially confident to pursue the goals which they seek and this context will influence the attitudes and expectations which they exhibit.

Millennials are also labelled within the literature as confident, high achieving, and ambitious. Howe and Strauss (2000:230) cite a survey from 1999 in which 62% of the 12-17 year old respondents believed they could be elected President. Gardner and Eng (2005) reference this same survey as evidence that the expectations of Millennials are unrealistic. What both papers fail to record is the way in which this question was asked (how many individuals, for example, would aspire to anything less than idolised positions within society, such as astronauts and presidents, if asked what they want to be when they grow up?). Gardner and Eng (2005) also seem unaware that ascribing 'realism' or pragmatism to the aspirations of a different generation is subject to the bias or influence of one's own age and generational identity. Their research is questionable in any event since the survey design they employ fails to identify the age of participants (and therefore whether or not they are in fact Millennials), and excludes those stay-at-home individuals

whose opinions of library services the survey was in fact trying to establish. This casts doubt upon the rest of their conclusions.

Tapscott (1999) also discusses the confidence and high expectations of Millennials, identifying the new found authority which children are enjoying in relation to the use of technology within the household. The Homenet Studies (1995-1996; 1997-1999; 2000-2002) at Carnegie Mellon University demonstrate the dominance of children as Internet users within the family unit. Tapscott (1999) has argued that this can only create a more consensual, open and effective family dynamic, emerging from what he describes as a 'generational lap' in which children, for the first time, have greater know-how than their parents on a particular issue. This almost certainly increases the likelihood of greater confidence among Millennials accordingly.

Millennials have also been described as optimistic (e.g. Howe & Strauss, 2000; Mitchell, 2003). Nine in ten label themselves as 'happy', 'confident', and 'positive' according to the Class Survey of 2000 undertaken by Howe and Strauss (2000). Technological solutions have enabled Millennials to overcome inconveniences and obstacles in all manners of areas and a sense of optimism is certain to result from this. Oblinger (2003), for example, reports on the specific case of college student life. According to her study some 79% of college students surveyed believed the impact of the Internet on student life to be a positive one, whilst 60% believed it to have improved relationships with colleagues and 56% with professors. Rettie (2002) identifies the links made between the Internet and such cultural values as democracy, openness, liberty, equality, fraternity, preference for anonymity, and anti-commercialism. If Internet communities are liberating and empowering (Fischer et al., 1996) for promoting these values then they also act as a catalyst for promoting optimism among users who are less constricted in what they can achieve.

Emerging from extensive use of technology, which enables individuals to remain connected with one another regardless of geography or other

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physical barriers, is the concept that Millennials are cooperative, team-oriented and collaborative in outlook. According to Oblinger (2003) some 70% of teens use instant messaging to keep in touch, with an even higher percentage (81%) using email. A majority, though slight at 56%, prefers the Internet to the telephone as a medium for communication. The time spent networking in this way, which includes some 10,000 hours playing video games in the life of the average college graduate (Prensky, 2001), along with mobile phone use and instant messaging, is much higher than that spent on individual activity (5,000 hours, for example, on reading). This generation is not only familiar with but demonstrates its preference for group-based activity. Goldgehn (2004) also notes the importance of "fitting in" by adhering to the expectations of both peers and peer communities, and a preference for learning in groups, not just playing in them. This last point contrasts with the findings of Gardner and Eng (2005) who report that the primary reason among undergraduates for using a library (80.6%) was to study alone (with group-based study down the list at 55.2%). That said, the caveats applied to this study have already been mentioned: the stay-at-home Millennials who may have been working on assignments and networking online rather than engaging in private study within the library will have been excluded from the study sample. These examples all illustrate the point that social networking among Millennials is commonplace and in many cases no longer bound by physical restrictions: these individuals are experienced in communicating on a global scale.

Millennials are also described as 'liberal' in terms of social and religious views, and 'conservative' in terms of financial attitude. It is important to note the values of the Millennials generation simply because these values will come to influence public policy, including that which concerns libraries. Millennials have demonstrated an unusual combination of liberalism and conservatism in their attitudes towards a variety of issues. On social and religious platforms, Millennials generally demonstrate a quite tolerant and liberal mind-set. Some 41% believe homosexuality is acceptable (compared with just 9% of the GI/WW2 Generation and only 26% of the Baby Boom

generation) and nearly a quarter seem less interested in dogmatic religion than their elders (21% of 18-24 year olds express no religious preference compared with just 6-7% of those aged 55 or over) (Mitchell, 2003:67). On a financial level, however, Millennials appear to be much more conservative than previous generations.

The *Second Millennials Generation Study*, conducted by Northwestern Mutual Life Insurance Co. (2001), supports the notion that financial attitudes are conservative, establishing that many had drafted goals for the next five years (akin to five year plans) by the time they were 18 years old; were in tune with realistic starting salaries; and had already begun job searching if not already employed. These findings were confirmed by a later study in 2002. Wolburg and Pokrywczynski (2001) and Neuborne and Kerwin (1999) have argued that such conservative attitudes towards finance emerge from experiencing greater financial responsibility at an earlier age.

This is certainly something with which UK students might also identify following the abolition of university grants and the introduction of student loans and, more recently, an increase in University tuition fees following abolition of the fee cap, as recommended in the Browne Report (Browne et al., 2010), as a response to government funding cuts. It might also be surmised that liberal attitudes concerning religious and social issues stem from a greater emphasis among Millennials on the value of independent thinking, which may itself result from increased responsibilities (financial or otherwise) experienced at an early age. According to US Census statistics, collated by Mitchell (2003), some 48% of Millennials placed independent thinking as the most important quality among children (and afterwards ranked working hard, obeying, helping others, and being popular, in that order). In contrast the GI/WW2 Generation placed 'obeying' as the most important quality, with independent thinking in second place.

2.1.3 Information seeking behaviour

Having described the context, and the resulting characteristics, of the Millennials generation it is important to examine how this generation interacts with information in order to better understand how library services, and information professionals, can suitably adapt to meet the user needs of Millennial undergraduates in higher education.

Millennials have variously been described as having a low boredom threshold (Manuel, 2002) with a preference for peer-based and active learning (e.g. Pickard, 2004; Manuel, 2002). They favour speed and convenience (e.g. Valentine, 2001 in Holliday & Li, 2004; Nowicki, 2003, Armstrong et al., 2001), rarely make use of advanced searching (e.g. CIBER, 2008) and choose commercial search engines as their first port of call (e.g. CIBER, 2008; Holliday & Li, 2004). These preferences have led to surface scanning, or fast surfing, information seeking behaviour, among this peer group. The information-seeking behaviour of Millennials has therefore been characterised by low levels of judgement on accuracy, relevance and authority of sources of information and an inability to determine when the search process has concluded (e.g. CIBER, 2008; Heinström, 2005; Holliday & Li, 2004).

Millennials have therefore been associated with information-seeking behaviour dominated by acts of satisficing, whereby an individual foregoes the best solution in favour of one which is acceptable by making "a judgement that the information is good enough to satisfy a need even though the full cost-benefit analysis was not performed" (Prabha et al., 2007:4). Barrett (2005:326) has described this in a more cynical way, suggesting that "undergraduates employ a coping strategy in their search for information, often seeking to find enough information to fulfil assignment requirements with the least cost in terms of time or social effort". Millennials are said to exhibit frustration with difficult searches and appear unable to introduce their own thoughts into the research process when a packaged answer is

unavailable (Holliday & Li, 2004). According to Heinström (2005) some of this can be attributed to psychological factors such as negative affectivity (nervousness, lack of confidence, anxiety) but these descriptions contrast sharply with the high achieving, confident Millennials described elsewhere in the literature. There is also contrary evidence which argues that Millennials are beginning to demonstrate proficiency with selecting high quality web resources (e.g. Krajewski & Piroli, 2002; Holliday & Li, 2004). Heinström (2005) also argues that stress can force even the most ardent 'deep diver' to surface scan.

Surface scanning behaviour may not, in fact, even be age-specific: CIBER (2008) claims that society as a whole is 'dumbing down'. There are, however, limitations to the 'Google Generation Report' (CIBER, 2008): the fast surfing behaviour exhibited among academics may simply be the result of expertise and familiarity rather than incompetent search strategies (Reisz, 2008), whilst a focus on two resources (the British Library's Learning website and JISC's Intute subject gateways) which are far from representative of the sorts of websites browsed by Millennials, or academics, does not help to provide a true picture of information seeking patterns within these groups. While this paper benefits from a 'virtual' longitudinal approach, it is important to note that it is a shortcoming within the majority of literature which examines information seeking behaviour among Millennials that a longitudinal approach is rarely taken. There is a shortage of empirical studies which assess a peer group's information seeking behaviour over a period of time and the conclusions drawn so far are only a snapshot. We cannot know if Millennials are unique in the behaviours which they are said to exhibit in comparison to 18-24 year olds of previous generations. Nicholas et al. (2009:107) remark that the "literature tends to be long on speculation and light on detail, over dependent on self-report methods and parochial".

Manuel (2002) argues that "many of Gen Y's traits simply heighten traits previously characteristic of typical learners" (Manuel, 2002:206). An attention span of 20 to 30 minutes existed long before MTV, and "poorly delivered presentations were seen as 'boring' long before the 1990s"

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(Manual, 2002:206). A deep log analysis study undertaken by Nicholas et al. (2009) holds conflicting views on the one hand arguing that students do exhibit a "distinctive form of information seeking behaviour" (Nicholas et al., 2009:126) which is appreciably different from other members of the academic community and on the other remarking that "student behaviour is still essentially traditional in nature" (Nicholas et al., 2009:130). Mill (2008:342) shares this sentiment, arguing that whilst the "abundance of information available through the Internet makes it readily possible for undergraduate students to write research papers without using a single library-supplied resource" there is hard evidence to suggest the contrary. Mill (2008) studied college student citations and indicated that open web citations accounted for just 16.7% of the total citations examined with students continuing to cite traditional library resources (books and journals).

The impact and influence of technology, and in particular the Internet and Web 2.0, seems, however, to be the unanimously agreed upon cause precipitating the information seeking behaviour which has been attributed to Millennials. "The web and the ubiquitous nature of electronic information sources enables some behaviour and discourages others" (Holliday & Li, 2004:364), and as a consequence "library users have rapidly become information consumers who can switch instantly between commercial search engines, social networking sites, wikis, bookmarked resources and electronic services provided by their library to satisfy their information needs" (CIBER, 2008:8). George (2007) observed that this behaviour forms part of a multitasking approach in which Millennials frequently (though not exclusively) undertake academic activity at the very same time as they engage in online, non-scholarly, activity. This behaviour stems from ubiquitous access to digital technology and it is interesting to note that, in some cases, in order to concentrate fully on academic study Millennials report a need to physically relocate to quieter environments to avoid 'electronic distractions' (George, 2007). The academic library, in such instances, evidently has a role to play in satisfying this need.

Millennials are also described as having a results-oriented approach to their academic work (Gross & Latham, 2009; Connaway, 2008) and consider the format of information sources to be far less important than immediacy, whilst their preference for non-linear experiential learning may also be attributed to Internet use (Connaway, 2008). Millennials expect searching to be like Google or other commercial search engines (Prabha et al., 2007; Holliday & Li, 2004) and their experiences interacting with a plethora of online resources have led to a rising demand for mass customisation (Manuel, 2002) and – according to Brabazon (2007) – increased plagiarism in the digital environment resulting from a breakdown in the boundary between discovering, and using, information. The "ease of locating information – facts – often gives students a false sense of mastery, in many cases bolstered by assignments and approaches to teaching that are out of date" (Halavais, in Reisz, 2008:online). Brabazon (2007:18) also observed that the sheer volume of information available on the web renders much of it irrelevant, out-of-date or corporatized, suggesting that "there are many other ways that [the ranking of sites within search engines] could be assembled, particularly with intervention by librarians and information managers".

Brabazon (2007:15) adds that "the popularity of Google is facilitating laziness, poor scholarship and complacent thinking", noting that whilst Google may not be the cause the search engine is responsible for encouraging and perpetuating this behaviour. However, whilst CIBER (2008) asserts that tools such as *Google Scholar* will therefore present an increasing threat to the library as an institution the evidence presented to support this claim is contradictory: of the five (quite disparate) mediums for sourcing information, *Google Scholar* persistently scores 4th and ranks 5th (last) for 22-35 year olds. These results do not describe generational difference and fail to support the notion that *Google Scholar* is likely to provide competition to the library. It is also prudent to note that the commonly held assumption that "users, and in particular young people, are familiar with new technology and have the intellectual ability to apply it" (Pickard, 2004:3) is misguided. Expectations of young people's ICT skills are unreasonably

high and often transferred to expectations of learning competency yet "digital literac[y] and information literac[y] do not go hand in hand" (CIBER, 2008:20).

This review of literature focuses on the extent of existing knowledge, and gaps in knowledge, within the field of Library and Information Services in order to contribute to the development of a theoretical framework. However, it is worthwhile noting briefly that other disciplines have also engaged with the issue of information-seeking behaviour. The Behavioural Sciences and, through an intersection of these with Information and Computer Sciences, Human-Computer Interaction studies, provide useful insight – for example – into the influence of pre-existing epistemological beliefs and needs on search techniques, methods of evaluating information, and an ability to recognise authority (e.g. Schommer-Aikins & Hutter, 2002; Whitmire, 2004). Personality has also been identified as a contributing factor in determining Internet use and online behaviour, in part linked to the concept of a 'need for cognition' (Amichai-Hamburger et al., 2007). Theories from cognate areas such as these are, however, taken into account within the LIS literature reviewed in this chapter; for example Heinström (2005) related information seeking to personality traits; Gross and Latham (2009) explored the application of Competence Theory to information literacy testing; and Prahba et al. (2007) considered Role Theory and Rational Choice Theory in relation to satisficing.

It is clear that the underlying factors which influence information-seeking behaviour are numerous, varied, and complex, but information-seeking behaviour must be considered whilst tailoring and delivering academic library services to users, including Millennials. Catalogues must be made easier to use, different resource discovery methods and access preferences must be accommodated, interfaces and delivery modes must be personalised, and opportunities for collaborative activities online and within physical library space must be developed (Connaway, 2008).

2.2 Library engagement with the Millennials Generation

Following on from an exploration of the characteristics attributed to the Millennials Generation within the literature, from context to attributes and outlook, and information-seeking behaviour, it is important to then consider how academic libraries and information professionals engage with this peer group. This section of the literature review therefore examines the changing role of the information professional in the context of strategic change – the transition from a collection-oriented service paradigm to a customer-oriented service paradigm – followed by reflection on the impact of technology on the role of the information professional. Finally, some consideration is then given to the wider issue of pedagogy and learner support. The scope of this section is limited to a selective examination of the literature rather than an in-depth assessment of converged services and specific staff roles or functions.

2.2.1 Strategic change

This section provides an introduction to the concept of 'change' in the theory and application of Library and Information Science (LIS) disciplines, and in the role of the information professional. Debates are prevalent within the literature, whether they concern the issue of automation during the 1970s and 1980s, or the notion of independent learning and the impact of electronic resources and IT from the 1990s onwards. The publication of the Joint Funding Councils' Libraries Review Group (1993) *Report*, commonly known as the 'Follett Report', set out a five to ten year vision for academic library service provision eighteen years ago, raising issues some of which still resonate today.

Concluding that modern pressures on library services include the rapid growth in student numbers; inflation in the costs of printed materials; new opportunities arising from the potential deployment of IT-based solutions; a lack of funding to match the pace of change; increasing numbers

of part-time and mature students; and a lack of physical space, the report – which conceptualised the 'virtual library' – argued that the application of IT was one of the single most important areas to affect future library service provision (JFCLRG, 1993).

The report went on to profoundly influence an on-going debate about the role of the information professional and accurately predicted, and was responsible for driving a number of developments within the profession including, for example, the transition from a collection-focused service model – or a 'holdings strategy' as the report prefers – to the customer-centred service model (or 'access strategy' in the report's terminology) (JFCLRG, 1993). This model is one in which organisations have begun to "see the customer as the starting point, listening post, and ultimate arbiter for everything they do" (Albrecht in Corrall, 2000:258). The implementation of service level agreements (SLAs), identifying minimum levels of performance that users might expect, became so widespread (Corrall, 2000) that they might be considered standard, or best, practice where once performance indicators and benchmarking were only recommended (JFCLRG, 1993).

Institutional strategies continue to be driven by issues highlighted by the Follett Report (JFCLRG, 1993) including the introduction of new models for creating, publishing and disseminating information; the pace of change in ICT; changes in client behaviour as generations change; the Higher Education sector realising a need for new approaches to teaching and learning; and the introduction of new mechanisms for funding research based on quality and impact (Horn, 2007). The Follett Report predicted that academic libraries would need to exploit the use of IT to create effective library services of the future (JFCLRG, 1993) and improved levels of collaboration between IT, library and learning development services to support new models of learner support, and more effectively manage the growth of electronic resource provision, are now evident (Biddiscombe, 2002; Oyston, 2003; Campbell, 2006). The Fielden Report, in turn, predicted that three roles would change substantially to satisfy the need for an increased

involvement in learner support and academic liaison, including subject librarians (John Fielden Consultancy, 1993). Fielden defined 'learner support' as "the activities within library/information services that exist to support individual learners" (John Fielden Consultancy, 1993:online), and suggested that subject librarians be responsible for:

1. Attending course planning committees;
2. Providing tuition (and setting and marking relevant tests/examinations) on study skills programmes;
3. Participating in academic audit and quality assurance initiatives;
4. Engaging in a university's staff development programme to help academic staff understand LIS resources and their potential value;
5. Providing technical support for staff and students in relation to electronic resources (and maintaining current awareness in the field);
6. Assisting students with any technical or access problems; and
7. Producing (or coordinating the production of) educational material about subject resources.

These responsibilities are now increasingly recognised (e.g. Biddescombe, 2002; Norry, 2003; Oyston, 2003; Bundy, 2004; CIBER, 2008). Organisational arrangements have been challenged and "more than half of UK higher education institutions have decided that organisational convergence of academic services is necessary to optimise their contribution to institutional strategies" (Oyston, 2003:19).

Changes to the undergraduate student experience have also since taken place, often in line with predictions made within the Follett and Fielden Reports. Students are now in regular contact with teaching staff (by email for example), capable of submitting assignments online (enabled by the widespread deployment of virtual learning environments), and able to access electronic resources regardless of the physical location of the user. Many students also enjoy the use of handheld devices to access content and are increasingly able to stream or replay video recordings of lectures or other teaching sessions. The accuracy of both reports extends also to problems

which, it was then suspected, might arise from an environment enabling people to publish and access information indiscriminately (JFCLRG, 1993): the information literacy movement, and investigations into the learning preferences and information seeking behaviour of a generation of students accustomed to accessing a mass of content freely available on the Internet, are now prevalent issues within current literature (e.g. CIBER, 2008; Pickard, 2004; Holliday & Li, 2004; Hepworth, 2000).

As service strategies have adapted to the pressures of change it is an essential task to identify the place and role of staff within new or altered service environments (Corrall, 2000). The role of staff has naturally altered to accommodate new institutional strategies, from incorporating electronic tools and resources to designing and delivering information literacy programmes, but how it has done so still depends on the local institutional context. Just as the Follett Report identified: there is no 'blueprint for change' (JFCLRG, 1993) nor is there a coherent theory describing how converged services should develop or how they are best managed (e.g. Hanson, 2005; Sutter, 2000). A uniform pattern, by which change in staff responsibilities and roles can be predicted, is therefore lacking, although certainly there exists rich evidence-based practice from which to draw (Hanson, 2005).

It is a valid observation, however, that as technology has afforded new solutions traditional services are downplayed or handled by paraprofessionals (Biddiscombe, 2002). This may be responsible for the recurring theme within the literature of an end-user revolution which threatens the profession with extinction (Corrall, 2005). It is also evident that an expansion into other roles is a necessary response to the impact of the Internet, and the growth of electronic resource delivery, on the relationship between information, the user, and the information professional (Corrall, 2005). Cross-skilling (in which library staff teach information skills to IT staff and IT staff teach computing skills to library staff), and multi-skilling (the development of hybrid roles, broadening the skill base of staff) are both models by which this change has been, and can be, accommodated (Norry,

2003) although Corrall (2005) argues that careers will ultimately diverge with technical specialists managing the information infrastructure and functional specialists marrying information with business and user needs.

2.2.3 The librarian as learning technologist

Students increasingly view themselves as consumers and on graduation face debts averaging £17,500 or more in the UK (Push, 2008). Although the earning threshold for repayment of student loans has recently been increased, as advocated by the Browne Report (Browne et al., 2010), students entering higher education expect both value for money and a 'one-stop shop' approach to resources, information, IT facilities and support mechanisms within one physical building (Ward, 2003). This is echoed by the findings of George (2007:68) where Millennials at the University of Rochester expressed their ideal library space as one which contains "group study areas and public spaces as well as quiet study areas, food and coffee service, and even places to take naps". This desire for a comprehensive physical space is matched by a desire for comprehensive service provision, even to the library website as a portal for "everything a student would ever need to use" (George, 2007:68) from connections to traditional materials to those for instant messaging, personal schedules and even "a way to order pizza". Services provided from behind barriers are therefore likely to be ignored and there is a risk that "libraries are not keeping up with the demands of students and researchers for services that are integrated and consistent with their wider Internet experience" (CIBER, 2008:30).

A new mission is therefore required in response to evidence suggesting that ease of access overrides concerns of trustworthiness in information resource use (Campbell, 2006). Lee (1996) made a recommendation over ten years ago, in relation to the predecessor peer group to Millennials, that instruction for Generation X students should be presented in short, focused segments in sessions designed to stimulate

rather than alienate. This sentiment is also applicable to the Millennials Generation whose needs "extend to even greater degrees of personal flexibility...and immediacy" (Sayers, 2007:480) and which looks to the Internet as the starting point in a haphazard research process with little regard for how information is structured or organised (Costello, Lenholt & Stryker, 2004).

While traditional services have so far, and are likely to continue to, remain unchanged (the demand for print material chief among them), others have increasingly needed to concentrate on delivering quality learning spaces; metadata development; virtual reference; information literacy instruction; the management of licensing; collecting and digitising archival material; and digital repositories (Campbell, 2006; CIBER, 2008). Quinsee (2005) observed the need for librarians to operate in a technology-enhanced environment so that they might accommodate the greater flexibility and mobility in learning which has arisen from the advent of these new technologies and approaches to learner support. A transition to e-delivery and the introduction of multi-services and new specialties has given rise to the integration of services and of specialist fields (Corrall, 2005) and as e-learning has become an increasingly prominent element of Higher Education curricula it has been essential for information professionals to broaden their skills, make the transition from subject support to learner support (Biddescombe, 2002) and engage in multidisciplinary alliances (Littlejohn, 2005).

Information professionals are increasingly faced with the prospect of creating and maintaining electronic resources, developing and managing associated policies, and handling licensing issues (Campbell, 2006). As traditional reference work decreases in response to the emergence of federated searching tools which make the information search process less complex staff must also adapt by developing competencies working with federated searching, open URL resolvers, and institutional repositories (Leong, 2008). The information professional is also often "at the forefront of

technological change within their organisation" (Holland, 2000:105) and must embrace the responsibility for operating as a catalyst, or 'change agent', by promoting technology-enhanced solutions and encouraging academic staff to enhance learning with technology including, for example, the application of virtual learning environments (VLEs) as a medium for delivering instruction (Biddiscombe, 2002).

The development of the VLE, conceptualised in the Follett Report (JFCLRG, 1993), has proven an effective solution to providing information at the point of need and had a profound impact on the delivery of teaching (MacColl, 2001; Pinfield, 2001a; Biddiscombe, 2002; Costello, Lenholt & Stryker, 2004; Hardy & Corrall, 2007; Corrall & Keates, 2011). VLEs can be used to circumvent "the tendency of today's students to turn first in their research to the Web or to the more general databases they are most familiar with, whether or not it is the best resource for finding information to complete an assignment" (Costello, Lenholt & Stryker, 2004:456). They are a viable platform for enabling subject librarians to provide learning support to students (particularly those studying remotely) (Biddescombe, 2002).

Institutions equipped with a VLE are now better positioned to capitalise on the basic computing knowledge which students already have by the time they arrive at university (Biddescombe, 2002) and on their enthusiasm for technology (Lee, 1996 in Costello, Lenholt & Stryker, 2004). Instructional librarians have two applied roles in this process: they must operate on the macro-level, developing a VLE with basic library services such as the OPAC, and on the micro-level, developing instructional programmes within an existing VLE framework (Shank & Donald, 2003). Yet despite these potential benefits, and the obvious role of subject librarians in the enhancement of VLE content and delivery, there are apparent lacklustre levels of engagement with institutional VLEs among subject librarians/academic libraries (Corrall & Keates, 2011). This is partly attributed to technical issues (access rights), and partly to issues of organisational culture (the need to negotiate those access rights and advocate the benefits of library involvement) (Corrall & Keates, 2011).

Recruitment evidence in recent years illustrates the emphasis which has been placed on IT aptitude by employers and the need for the librarian to fill the role of learning technologist: job titles have evolved to include 'electronic' or 'digital' and more positions require an IT or educational focus (TFPL, 2001; Corrall, 2005; Parry, 2008). Whilst comprehensive IT skills are not always mentioned in job adverts they do appear in detailed person specifications (Parry, 2008). Findings from the TFPL (2001) investigation into strategic information skills also indicate that this extends from functional, or frontline staff, to senior managerial positions which increasingly relate to the management of staff who collaborate online and work with information governance, promote and exploit electronic content, and analyse information (Kennedy and Abell, 2008).

There must, however, be a clear purpose behind the application of ICT, and of VLEs, for students to perceive value. Institutions are best placed when they recognise the importance of familiarity to students when designing new technology-based solutions (Hutchings, 2008). While students are generally prepared to accommodate new forms of technology within learning there are limits to what they consider appropriate. The possibility of exploiting online social networking, for example, which is prolific among students, is not well received by students as having any useful application in formal teaching (Hutchings, 2008).

It is evident from commentary in the literature that the pace of change in IT and introduction of new forms of technology-based learning support solutions, such as VLEs and digital repositories, have driven change in the profession. IT aptitude is now an inherently important competency which is required by librarians to enable them to support a customer-centred service paradigm, often in converged service environments. The solutions which are developed and supported by IT competent staff must, however, be relevant to students.

2.2.2 Pedagogy and learner support

Levy and Roberts (2005:223) identify a fascination with technology in the literature with concern, cautioning that "technology should not be fore-grounded at the expense of issues related to pedagogy and team dynamics". They argue that a focus on 'the human dimension' is essential and commentary from North American sources, which focuses on behavioural approaches in contrast to the UK's 'occupational functional competence model', tends to support this holistic view (LeDeist & Winterton in Soutter, 2007). Whilst traditional subject skills are no longer regarded with the same importance as functional skills (Pinfield, 2001a), and whilst it is important to recognise the need for librarians to engage with the deployment of IT-based solutions to enhance service provision in converged service environments, "it is in support for teaching and learning that some of the most profound changes have occurred" (Norry, 2003:94).

The concept of information literacy, with its roots in 'bibliographic instruction', developed in response to the need for guaranteeing successful access, navigation and evaluation of information (Sprole et al., 2008). The notion of user education or instruction is not new and over the last 30 to 35 years there has been a growing acceptance that information professionals need to play an active role in the learning process (Biddescome, 2002; Sprole, Johnson & Farison, 2008). Emphasis on independent and student-centred learning (Oyston, 2003), which regards lecture-based teaching methods as an ineffective model for learning (Kirkpatrick et al. in Bundy, 2004), has imposed change on institutional practice and prompted a new outcome-based learning paradigm which requires that libraries move from the collection-oriented paradigm to practical learner support in the pursuit of learning outcomes (Cassell, 1999; Norry, 2003; Bundy, 2004). Some information professionals have therefore been required to make the transition from subject support to learner support and acknowledge weakening links to the traditional library structure (Biddescome, 2002).

Adopting this responsibility for intervention at the stage of higher education may, however, be too late to remedy bad habits (e.g. CIBER, 2008; Pickard, 2004; Holliday & Li, 2004; Hepworth, 2000). The academic librarian may therefore be called upon more frequently to liaise with school librarians and educators to "ensure they are integrated into the teaching infrastructure by sitting on curriculum committees" (Hepworth, 2000:27) and positioned to "...encourage the movement into refereed research, stressing that Google is the start – not the entirety – of a search" (Brabazon, 2007:20). It is essential the whole system of education is better positioned to equip and prepare students with the necessary information literacy skills and this will require cross-sector collaboration (e.g. CIBER, 2008; Holliday & Li, 2004; Manual, 2002). Brabazon (2007) advocates an explicit, enacted, curriculum with a move away from assessment criteria and lists to clearly framed sets of expectations: explicit, rather than unspoken, assumptions about learning objectives and requirements. This process would benefit from the input of librarians who are able to "punctuate the information landscape, controlling and managing enthusiasm and confusion" (Brabazon, 2007:37). Information literacy programmes need tailoring to more effectively suit all ability levels and to avoid 'busywork' (Manual, 2002). The transition from a fragmented approach (imparting specific, isolated, skills through individual sessions) to an integrated approach, as generally practised within the US, Canada, Scandinavia, Australia and the UK, emphasises problem-based learning (Hepworth, 2000). An intermediate approach may still be advantageous: compulsory information literacy courses would ensure that students take sessions seriously (as a result of formal assessment). In either case it is important to recognise that this paradigm shift has largely taken place, with libraries refocusing their objectives from content-oriented instruction to outcome-based instruction (CIBER, 2008) as illustrated by Figure 2.1.

Instructional programmes should therefore be focused on research and information skills rather than those skills required to use physical collections (Reisz, 2008); "librarians need to think beyond the traditional access skills associated with using the library" (Hepworth, 2000:27) and

instead consider highlighting the way that students think about information rather than the way they use technology itself (Hutchings, 2008). It is essential to avoid exhibiting a negative attitude towards IT; such an approach creates, rather than removes, obstacles:

> "...lecturing upon the drawbacks of the Internet [is] especially inappropriate...[students] interpreted the words of caution by the instructor about the Internet as a 'trashing' of technology whose limitations they had not personally experienced, by someone professionally threatened by the Internet" (Manual, 2002:199).

The end result of information literacy instruction should be a recognition that "the better equipped students are when it comes to formulating search strategies, then the less uncertain and frustrated they are, and the more successful the outcome" (Holliday & Li, 2004:361). However, while this may appear sound in theory there is evidence to suggest that, in any event, students are unaware even of 'information literacy' as a term and that those "who receive information literacy instruction do not necessarily learn, or retain, what is taught" (Gross & Latham, 2009:336). It is essential, therefore, to factor in the information-seeking behaviour of students as context to any information literacy programme.

- Content oriented (now)
- User-facing perspective
- Outcome focus (required)
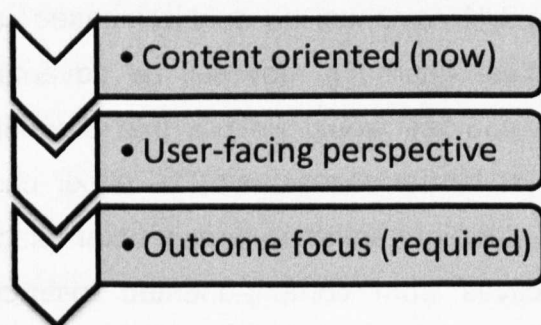
Figure 2.1. Paradigms of library instructional programmes.

Subject librarians are well placed to step into new learning support roles because they are already equipped with an extended skills base, experience, and ingenuity (Biddescombe, 2002). They have also always provided clients with training in locating, retrieving, analysing and using

information effectively (Julien, 2005); as Brabazon (2007:47) notes, "...librarians do not provide information but a path through information". This is not, however, sufficient in itself: librarians assuming teaching responsibilities must acquire a firm understanding of pedagogical practice from which relevant qualifications (such as those recognised by the Institute of Learning and Teaching) can be obtained (Biddescombe, 2002), and recognise that "facilitating learning involves understanding who our students are" (McGlynn, 2005:12).

Despite the importance which is now placed upon teaching roles the scenario for pedagogical instruction is grim. In 2002 only 19% of librarians received any sort of training in library instruction within MLIS[3] programmes across North America (Albrech & Baron, 2002). By 2005 the picture was no better with only one university – the University of Washington – offering instruction as a core course and 51.6% of library schools failing to offer any instructional training courses (Julien, 2005). The situation in the last three years has improved at least in terms of exposure to the concept of information literacy instruction, even if not in the education of information professionals in pedagogical practice (Sproles et al., 2008). The situation is not specific to North America: Julien (2005) observed that, on a global level, fewer than half of schools graduating librarians are providing preparation in instructional skills and those which do frequently omit basic information literacy concepts, outcomes evaluation, needs assessment and web-based strategies. Emphasis on instructional design and teaching methods, at the expense of leadership, administration and assessment skills, compounded by the continued elective, rather than compulsory, nature of these courses, suggests that where the concept of library instruction is imparted it is done so in a fragmented fashion which lacks effectiveness (Sproles et al., 2008). The implication is that information professionals are not adequately prepared by library school curricula for the teaching roles which they are increasingly

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[3] MLIS, or Master of Library and Information Science, is the post baccalaureate degree granted by a library school, in North America, upon completion of a required course of study. The qualification is equivalent to MA or MSc degrees offered by library schools in the UK.

required to undertake (Albrecht & Baron, 2002; Julien, 2005; Sproles et al., 2008), reaffirming the picture painted over ten years ago by Affleck (1996).

The effectiveness of information literacy tuition also depends upon a pedagogical approach suited to recipients and "it...is critical for teachers to be aware of how students learn in order to better pitch their teaching approach" (Mokhtar et al., 2008:95). However, this raises fundamental questions about the very principles of the education system in the Western world. Brabazon (2007) and Robinson (2008) both highlight the perception that higher education is for the express purpose of high paid employment. At the heart of the consumerist, goal-oriented expectations 'inherited' by the Millennials Generation lies a (dys)functionally archaic paradigm of education – a factory (or Ford-ist, as Brabazon (2007) volunteers) approach geared to economic ends. Millennials expect to excel, particularly if the financial means are available, and they are therefore demanding levels of support which include individual attention, extra help, and the provision of institutional resources which will help them overcome any difficulties encountered on the way (McGlynn, 2005).

This sense of entitlement, often resented by professional practitioners, can be accommodated by an approach which takes into account the need for active, interactive, engagement in the learning process according to McGlynn (2005) and must also recognise that the skills students require today – which include information, media and business literacy; analytical and problem solving abilities; and interpersonal, collaborative and self direction skills – differ from those needed twenty years ago (Regan, 2008). The context of schooling has changed, even if the underlying economic objectives remain the same, and "students are more comfortable experimenting with technology and visual images because these things are often a regular part of their lives outside school" (Regan, 2008:12). Whilst McGuire (2005) and Regan (2008) therefore argue in favour of an approach which makes use of visual, auditory and kinaesthetic learning styles to facilitate long-term retrieval, rather than focusing on learning by rote, Brabazon (2007:86) notes that by "...meeting students' needs and granting them a choice in course

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delivery, academic time is spent keeping this new student-customer satisfied" rather than increasing students' self-sufficiency. This view sharply contrasts with the argument that the Internet has empowered learners. Indeed, Brabazon (2007:219) argues that "...the medium (the Internet) has become the message (economic rationalism)".

Whilst information literacy may therefore be most effective when taught in the context of content-based courses, assignments, or projects (Jacobson & Mark in Mokhtar et al., 2008) and portfolio-based methods of assessment, on longitudinal lines, in which core ideas can be supplemented by interactive digital experiences, the need to encourage Millennials to "...transform from passive consumers to more critical and creative students" (Regan, 2008:13) must not rely too heavily on technological applications which may ultimately serve to impede the development of independent scholarly ability.

2.3 Effective service provision

This section of the literature review aims to examine current thinking surrounding effective service provision. The concept of service quality is examined first which includes consideration for a definition of 'service quality' and why it is important to measure it. This is then followed by an exploration of two specific standardised measurement instruments – Libra Survey software from Priority Search Ltd (West, 2004) and LibQUAL+ (ARL, 2009). The second element of this section then examines national and international competency frameworks for information professionals. Finally, the importance of emotional intelligence (EI) is considered in the context of understanding the affect of service.

2.3.1 Service quality

Quality is the "has" and "does" of a service (Hernon & Altman, 1998). The extent of quality was once measured by the word of the customer: if a service performed then users would acknowledge that it did so; the opinions of an organisation in this arrangement are considered moot. It is now widely debated as to what 'quality' truly means and how it relates to user perceptions. Hernon and Nitecki (2001) believe that quality emerges from expectations whilst satisfaction emerges from experiences. This is somewhat naïve since expectations are shaped by past experiences and satisfaction is arguably linked to how services respond to such expectations (e.g. Babakus & Boller, 1992; Cronin & Taylor, 1992; Andaleeb & Simmonds, 1998). Caruana et. al. (2000) suggest that the collection of data about expectations and perceptions is therefore best done separately. However, consideration of quality, value, expectation, or satisfaction must naturally require measurement of the others (Cronin et al., 2000). It is clear, then, that there is a relationship between distinct but interrelated variables: quality, value, satisfaction, and expectation.

Convergent theory suggests that satisfaction derives from perceived quality, which in turn is determined by perceived value. Value is affected by factors such as price (e.g. Fornell et. al., 1996; Athanassopoulos, 2000). Divergent theory examines each variable, and bivariate relationships, and the impact on the behavioural intentions of service users. These relationships might include the effect of service quality on behavioural intent; the effect of service satisfaction on behavioural intent; or the effects of value on satisfaction and then satisfaction on behavioural intent in turn. There are many competing models within this framework including the "value model", the "satisfaction model", the "indirect model", and more recently the "research model" which focuses on examining customer expectations and the tangible elements of quality (Cronin et al., 2000). Standardised measurement tools such as LibQUAL+ aim to do just this. Hernon and Nitecki (2001) suggest that service quality is defined by excellence (often externally defined with the library being part of the wider institution); value

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(the benefit to the customer); conformance to specifications (i.e. precise service measurements, though this is questionable since the relevance of these to the user might be slight); and meeting or exceeding expectations (which may change). It is this approach on which the gaps model of analysis, and the majority of research into service quality, is focused.

Better service quality will provide better quality services: the outcome of service evaluation must be to "delight customers", "create loyalty", and provide a "realistic set of expectations about what libraries can and cannot do" (Hernon & Nitecki, 2001:688). There are a number of benefits which might result from introducing, amending and improving services: changes in skills and competencies; changes in attitude and behaviour (information seeking and information literacy); changes in library clientele (to attract non-users and remove barriers); higher social inclusion (providing access to employment opportunities, civic participation, local identity and resources which low-income households normally cannot access); and finally higher academic and employment success (Poll, 2005).

Evaluation ought to be a continuous cyclical process (Hernon & Whitman, 2001). On-going communication and cooperation between the library and its users, and examining service performance assessment targets and timeframes, are essential. How this might best be achieved is an issue beyond the scope of this project but it is worth observing that, despite on-going negative reception, "there are accounting principles that can benefit how libraries are run" (Hoadley, 1999:269). Libraries should not only be financially efficient but also accountable to their users and the organisation as a whole. Effective service evaluation therefore "require[s] certain skills more aligned to marketing and business than to librarianship. Assessment has not been taught or appreciated by the profession" (Lakos & Phipps, 2004:351). The growing use of standardised service performance evaluation tools does, however, begin to create a culture of assessment which will

eventually outlast these instruments and encourage the profession to change and improve in this area (Wei et al., 2005).

Without an understanding of the library user base there is a risk that certain assumptions will pre-exist on which subsequent surveys may be based (Davies, 2007). Concentrating only on aspects which library staff already know to be an issue damages the overall assessment of service quality; the focus should be on understanding library users. Service evaluation should move beyond physical collections to examining provision across both physical and virtual mediums and instituting improvement via continual dialogue between library and user (e.g. Hitchingham & Kenney, 2002; Wei et al., 2005; Davies, 2007). This requires an acknowledgment that expectations may be shaped by technology and competitors such as Amazon and Google (e.g. Jankowska et al., 2006).

A standardised and regular approach to service evaluation bolsters the reliability and validity of data by providing longitudinal information, and feeds findings more effectively into cyclical strategic planning by permitting both internal and external benchmarking (e.g. West, 2001; Hernon, 2002). Benchmarking assists in determining institutional effectiveness which is "concerned...with demonstrating accountability (fiscal efficiency) and educational quality, and...the improvement of performance (e.g. student learning) and the production of faculty research" (Hernon & Dugan in Hernon, 2002:229). While most libraries within the UK employ an annual satisfaction survey there are still a significant number who utilise in-house methods rather than a standardised instrument such as Libra or LibQUAL+ (SCONUL, 2003). The trend is for the local library to determine frequency, focus and method. International standards do exist to guide data collection relating to library service performance (e.g. ISO 11620, 2008; ISO 2789, 2006) but a more formulaic measurement tool can encourage increased rigour in assessment practices to produce data which are valid for benchmarking.

The Gaps Model of Service Quality, used within Libra, LibQUAL+, and SERVQUAL on which LibQUAL+ is based, compares organisational perspectives with customer perspectives across five 'gaps' which need to be addressed to ensure services perform satisfactorily (see Table 2.2). Expectations are subjective, may change, and are broken down into desired wants and essential attributes of a service with customers asked to rate each of these aspects for a particular service side-by-side (Hernon, 2002).

There are three possible outcomes:

1. Confirmed (expectations and performance match);
2. Affirmed/negatively disconfirmed (performance exceeds expectations);
3. Disconfirmed/positively disconfirmed (expectations exceed performance).

Table 2.1. The gaps model of service quality

Customer Perspectives		Organisational Perspectives
1. Expectation of service		1. Organisation perspective on expectations
2. Service quality specifications		2. Organisation perspective on expectations
3. Service specifications	GAP	3. Service delivery
4. Service delivery		4. External communication with users about service delivery
5. Expectations of service		5. Perceived service delivery

LibQUAL+ utilises this model by providing 22 items against which minimum and desired expectations, and perceived performance, are measured and compared. The instrument has a proven record of international use and is increasingly popular: more than 100,000 library users participated in 2004 LibQUAL+ deployment across United States, Europe and Australia and between 2000 and 2005 data from 300,000 participants had been collected (Wei et al., 2005:93). Other widely used instruments, such as Libra from Priority Search (SCONUL, 2003), also utilise the Gaps Model approach.

Within the UK a consortium of SCONUL libraries have participated in LibQUAL+ since a pilot in 2003 (SCONUL, 2008). In 2004 this consortium was established and included seventeen member institutions:

1. Anglia Polytechnic University
2. Brunel University
3. Glasgow University
4. London South Bank University
5. Loughborough University
6. Napier University
7. Queen Margaret University College
8. Trinity College, Dublin
9. UMIST & University of Manchester
10. University College Worcester
11. University of East London
12. University of Liverpool
13. University of Paisley
14. University of Sheffield
15. University of Strathclyde
16. University of Westminster
17. University of York

Since the initial pilot, and the conception of the SCONUL LibQUAL+ consortium, several universities continue to make use of LibQUAL+ as an effective means of obtaining data to measure performance against user expectations. These include the University of Sheffield – where it was identified that LibQUAL+ could valuably feed into wider data collection efforts from the National Student Survey to the institutional Student Satisfaction Survey (O'Donovan, n.d.); Queen Mary University of London which has participated in LibQUAL+ on three occasions since – including 2006, 2008 and most recently in 2011 (Queen Mary University of London, 2011); and the University of Liverpool which participated in 2006, 2008 and 2010 – where

the benefit of benchmarking against other UK institutions was acknowledged (University of Liverpool, 2010?).

LibQUAL+ is evidently an increasingly popular method of data collection and, given the international scope of application and ability to benchmark against similar participating institutions, increasingly perceived as a valuable means of obtaining useful data to assess performance against user expectations.

2.3.2 Staff competencies

Fisher et al. (2005) have highlighted the current disparity between the skills agenda on the local, or institutional, level and on the national level. They observe that employers generally seem content to work in isolation, allowing staff to self-determine training needs or undertake appraisals only in the context of local staff development resources. There are, however, examples of best practice working to create a community of practice, such as the collaboration between staff from the University of Sheffield and from Sheffield Hallam University, through the medium of a VLE (Fisher et al., 2005). Professional organisations therefore have an important role to play in supporting and providing a variety of learning opportunities and promoting the issue of skills development at the national level (Fisher et al., 2005) in order to encourage collaborative exercises to develop more extensive communities of practice.

The Chartered Institute of Library and Information Professionals (CILIP), American Library Association (ALA), Australian Library and Information Association (ALIA) and the Special Libraries Association (SLA), have produced a series of formal statements of competencies required by information professionals which reflect national agenda. Educational guidelines for LIS curricula have also been published by the American Society for Information Science and Technology (ASIST), the International

Federation of Library Associations and Institutions (IFLA) and the Quality Assurance Agency for Higher Education in the UK (QAA). These statements guide and direct the vocational education of information professionals and provide an insight into the perceived roles and responsibilities facing employees in a career in LIS. It is therefore prudent to describe and compare these statements and guidelines following an appreciation for the context of the changing role of the information professional as described within the previous section of this chapter.

The formal statements from these professional organisations lack a uniform approach. CILIP's *Body of Professional Knowledge* (CILIP, 2004) utilises a conceptual framework, around which competencies are built, and aims to distinguish the skills of information professionals from other professions. SLA's *Competencies for Information Professionals of the 21st Century* (Abels et al., 2003) takes a more applied approach which is partly evidence-based and partly based on the SLA's own *Research Statement* (SLA, 2001). ALIA adopts a pragmatic approach with a core knowledge statement detailing specific skills and attributes (ALIA, 2005). IFLA produced *Guidelines for professional library/information educational programmes* (Daniel, E., et al., 2003) which mirror the *Subject benchmark statement* produced by QAA (QAA, 2007) and the *ASIST educational guidelines* (ASIST, 2001). These guidelines bear relevance to the other formal statements examined here since they reflect the educational preparation which information professionals are advised to undergo to meet the requirements of a first professional post. The lack of a uniform approach by all of the statements produced by this wide range of organisations is also evident within the choice of categories under which skills and competencies are organised. For the purpose of providing a meaningful comparison it is therefore appropriate to introduce arbitrary, but informed, headings for this exercise.

All of the statements emphasise the importance of understanding professional excellence, ethical values, legal issues, and principles of the library and information profession (Daniel, E., et al., 2003; Abels et al., 2003; CILIP, 2004; ALIA, 2005; ASIST, 2001; QAA, 2007). Although terminology differs across the formal statements in this area – and in general – these competencies can be loosely categorised as an awareness and understanding of the 'information environment'. Both SLA (Abels et al., 2003) and IFLA (Daniel, E., et al., 2003) regard this knowledge as a core competency. Abels et al. (2003) and ALIA (2005) extend knowledge of the information environment to encompass the need for collaborative efforts aimed at sharing evidence-based best practice and advancement of LIS theory. ALA (2009), IFLA (Daniel, E., et al., 2003), and ASIST (2001) also recommend that LIS educational programmes cover the history of the discipline, arguably to cement competencies within context.

Understanding information architecture

CILIP (2004) and QAA (2007) advocate a need for professionals to understand information policies (and processes), information governance, and a perspective on communication which includes the relationship between users and information and information needs and user behaviour. The *Body of Professional Knowledge* (CILIP, 2004) the *Subject benchmark statement* (QAA, 2007) and *ASIST educational guidelines* (ASIST, 2001) make specific reference to the term 'information architecture'. CILIP (2004) and ASIST (2001) fail to define or clarify the application of information architecture in comparison with QAA (2007) which is quite explicit. Specific skills, which might assist with an appreciation for information architecture, are listed by CILIP (2004) however, and these include the ability to create metadata, analyse content, digitise, and to utilise structural tagging and mark-up as well as hypertext linkage. ALIA (2005) takes an holistic view by suggesting that information professionals must understand the importance of

information architecture in order to determine the structure, design, and flow of information to forecast, plan, facilitate, and evaluate appropriate resource management within LIS. The importance of promoting intellectual freedom, and free and equitable access to information, is also highlighted both by ALIA (2005) and ALA (2009). The statement produced by SLA (Abels et al., 2003) lacks depth in this area, recommending only that professionals be capable of assessing, selecting and applying current and emerging tools to create information access and delivery solutions. Abels, et al. (2003) and ALA (2009) are more clear in the need for information professionals to demonstrate an awareness of emerging technologies with ALA going a step further in suggesting that relevant technological improvements be implemented as a matter of course. IFLA (Daniel, E., et al., 2003) omits any mention of information architecture.

Organising information

On a more functional level all of the formal statements indicate a need for competency with the organisation of information. QAA (2007) elaborates further by indicating that professionals should apply their subject knowledge to real world situations. CILIP (2004) defines the organisation of information quite precisely, which contrasts with the touted conceptual approach, as knowledge of taxonomies, classification schemes and thesauri. This is supported by QAA (2007), SLA (Abels et al., 2003) and ALA (2009) whose statements recommend that professionals be capable of organising, categorising, cataloguing, classifying, disseminating, creating and managing taxonomies, intranets, extranets, and thesauri content. ALIA (2005) contextualises this practice within a systematic and user-centred approach. All statements make mention of preservation, storage and retrieval skills (Daniel, E., et al., 2003; Abels et al., 2003; CILIP, 2004; ALA, 2009; ALIA, 2005; ASIST, 2001; QAA, 2007).

All statements concur that information professionals need to be equipped with the necessary skills for assessing and evaluating services. CILIP (2004) advocates marketing skills and a familiarity with research methods. ALIA (2005), SLA (Abels et al., 2003), IFLA (Daniel, E., et al., 2003) and QAA (2007) also highlight the need for competency with research techniques and skills with IFLA (Daniel, E., et al., 2003), QAA (2007) and ALA (2009) making specific mention of both quantitative and qualitative methods. QAA (2007) also observes the importance of research in the context of evidence-based policy and practice. ALIA (2005) provides a more comprehensive definition than CILIP (2004) and recommends that the professional be able to design and deliver customised services and assess the value and effectiveness not only of services but of products and facilities. Both ALIA (2005) and SLA (Abels et al., 2003) highlight the need for customised, or user-centric, solutions which are based on relevance to the client. Abels et al. (2003) add that business acumen is also a necessary element for service evaluation, expressing a need for services to be cost-effective and aligned with the strategic directions of the organisation. ALA (2009) partly supports this view in highlighting a need for sound administrative and managerial skills.

Learner support

The *Body of Professional Knowledge* (CILIP, 2004) and the *Subject benchmark statement* (QAA, 2007) both utilise an 'Information literacy' category and also cover the need for skills in information retrieval, data mining, information brokerage, website and portal design. CILIP (2004) fails to make specific mention of information literacy education, whilst QAA (2007) details a need to understand information literacy concepts and their application in education, the workplace, and society. This is mirrored by ALIA (2005). ALA (2009) cover the need for sound pedagogical knowledge in a category which also highlights the need for a commitment to continuing

education and lifelong learning. ASIST dedicates one of six areas to information use and users, which includes knowledge of the information seeking behaviour of users, human-computer interaction, user-centred design and product development, and needs assessment and evaluation. In comparison, *Competencies for Information Professionals of the 21st Century* (Abels et al., 2003) relegates information literacy to an applied scenario under the category of 'Professional competencies - managing information services'. Corrall (2005) argues that this is unhelpful though it is possible that this competency is now taken for granted and no longer needs highlighting independently of other, more broad and holistic, competencies. The statement produced by SLA (Abels et al., 2003) tends to take an holistic approach in general, focusing on the overarching management responsibilities of information professionals rather than on specific duties, which makes this likely. IFLA (Daniel, E., et al., 2003) makes no mention of information literacy.

Personal and interpersonal skills

Statements are precise on the need for personal and interpersonal skills which contrasts with the generally broad frameworks used by professional organisations in other categories of competencies and skills. CILIP (2004) refers to interpersonal skills, management skills (which include human resource and financial management), and – uniquely – training and mentoring, and places these within a 'Generic skills' category. ALIA (2005) and SLA (Abels et al., 2003) offer the most comprehensive coverage of personal and interpersonal skills (categorised as 'Generic skills and attributes' by ALIA in a similar manner to CILIP, and as 'Personal competencies' by Abels et al. (2003)), in a manner similar to the QAA (2007), stating that information professionals must be competent communicators who are able to exhibit critical, reflecting and creating thinking. The capacity to build partnerships, alliances and networks is explicitly stated by ALIA (2005), SLA (Abels et al., 2003), QAA (2007) and ALA (2009). SLA (Abels et al., 2003) and ALIA (2005) elaborate further by recommending professionals be committed to personal and professional development and develop

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relevant skills with IT, team working and leadership, and self-management. SLA (Abels et al., 2003) adds to this a need for value networking, the pursuit of work-life balance, and a flexible and positive demeanour celebrating achievements both for one's self and for others. The SLA (Abels et al., 2003) and ALIA (2005) statements generally reflect the EI framework of personal traits and complement commentary within the literature.

2.3.3 Affect of service

The extent of collaboration and interaction with stakeholders at all levels, whether in support for the deployment of IT-based solutions or in the delivery of teaching, requires that the information professional be equipped with personal and interpersonal skills and an understanding of the information architecture[4] with which they work, in order to maximise the affect of a library service. The participation of information professionals in cross-faculty or cross-departmental collaboration, the integration of library services directly into academic provision, and in innovative approaches to the support of learning is necessary for a new independent resource-based, or outcome-based, learning paradigm to emerge (Norry, 2003; Bundy, 2004; Ashcroft; 2004; Corrall, 2005; Campbell, 2006). In order to operate as change agents and promote technology-enhanced solutions information professionals must be experts, understand their client group and networks, engage in face-to-face contact, be accessible and objective, and exploit networks to disseminate information (Holland, 2000). Information professionals need to engage not only in effective information literacy instruction but also in collaborative efforts which will naturally emerge as the

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[4] Information architecture is defined as "the structural design of shared information environments, the art and science of organising and labelling websites, intranets, online communities and software, to support usability and findability, and an emerging community of practice focused on bringing principles of design and architecture to the digital landscape" (Information Architecture Institute (IAI) in Kennedy & Abell, 2008:27).

divisions between teaching, the library, and IT become meaningless (Biddescombe, 2002; Line in Bundy, 2004).

A shift from teaching-centred learning cannot be accomplished independently within higher education, for example: "universities and their libraries cannot achieve their full potential in isolation from the other formal sectors of education" (Bundy, 2004:10). The findings from CIBER (2008) concur: intervention at school level is critical for equipping students with the necessary information skills. Failure to recognise the importance of collaboration may mean that the education sector as a whole is "held accountable for sending students into careers who are unprepared to function effectively in the complex information environment" (Ianuzzi in Bundy, 2004:11). It is therefore essential that the information professional be equipped with the capacity to collaborate and liaise (Corrall, 2005). Enhanced team working skills are necessary, in tandem with career management skills, to cope with an accelerated rate of change, and enhanced customer service skills to better meet the needs of students (Norry, 2003) whilst "the knowledge and skills required to formulate and deliver effective teaching and learning experiences must take an essential, rather than desirable, place in the librarian's portfolio" (Peacock, 2001:28). Ultimately, "the core activity of a learning commons should be the collaborative learning by which students turn information into knowledge, not the manifestation and mastery of information" (Bundy, 2004:9).

Information professionals should therefore be expected to collaborate with teachers, and other stakeholders in the education sector as a whole – including external agencies – to deliver information literacy, manage increased teaching responsibilities and develop and deliver new electronic-based services (Corrall, 2005). On a basic level staff must be able to acknowledge the different needs of stakeholders (Corrall, 2000) and, as modes of learning increase, be prepared and equipped to extend information literacy and other learner support activities to remote access and part-time students (Cassell, 1999). Interpersonal and assertiveness skills are necessary (for frontline staff), along with knowledge of complaints

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procedures and suggestions, the capacity to undertake customer surveys, focus groups, and user panels to identify needs and priorities, the ability to manage public relations, and an awareness of strategic objectives enabling the drafting of customer charters, service codes and standards (Corrall, 2000). "Tailoring services to needs requires effective communication, liaison and teamwork; not only communication with service users but communication among service staff upwards, downwards and sideways indicating that the customer care depends on staff care in every sense of that term" (Corrall, 2000:259).

It is therefore unsurprising that 'soft skills' (personal, interpersonal and transferable skills) are now being emphasised more than 'hard skills' (technical and cognitive skills) and IT aptitude, whilst essential, is increasingly taken for granted and assumed to have been acquired through completion of library and information science programmes (Promis, 2008). The concept of e-learning, as a phenomenon distinct from traditional approaches to learning, is now increasingly redundant as Levy and Roberts (2005) predicted. Employers are now demanding "high-order thinking skills such as creative thinking, critical and analytical thinking, data manipulation, and synthesis, and decision-making" (Promis, 2008:24) and a significant proportion of new jobs focus on project management, information architecture, and the support of end-users (Kennedy & Abell, 2008).

As information skills begin to align with organisational objectives more traditional information skills "provide less of a competitive advantage unless they are presented in ways which cut through the noise and depict insights for decision-making, sense-making or knowledge creation" (Kennedy & Abell, 2008:25). There is a convincing argument, therefore, for emphasising competencies covered by the Emotional Intelligence (EI)[5] framework (Promis, 2008). While job adverts rarely make mention of EI directly they do

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[5] Emotional Intelligence (EI), a theory which emerged in the 1990s, is "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer in Promis, 2008:24).

call for candidates to exhibit those attitudes and values which form part of the framework (Promis, 2008; Gerolimos & Konsta, 2008). The professional background of managers, for example, is now considerably less important than management skills themselves (Oyston, 2003). Although Hernon and Rossiter (2006) focused primarily on EI as a necessary precursor for effective leadership among managers of LIS, only briefly mentioning its validity for all information professionals across the organisation, it is evident from an more recent examination of recruitment material that EI traits apply across the board, from entry-level to senior management positions (Promis, 2008).

While transferable, often business-oriented, competencies may seem irrelevant or secondary to functional skills in the academic context it is important to remember that "non-profit organisations don't have the profit concern but must continue to show the value they provide to the community they serve" (Schachter, 2007:39). 'Soft skills' are therefore far from irrelevant and it is essential that staff understand the specific business context within which they work (Corrall, 2005; Kennedy & Abell, 2008). The nature of literature in this area reflects this trend by drawing substantially from other disciplines and in many cases originating with solely non-LIS disciplines (Soutter, 2007). A trend of employability, not just skills for employment, appears to have emerged and practitioners and students of LIS should "manage, monitor, and reflect on their personal professional development" as a result (Corrall, 2005:17).

Clearly it is insufficient for the information professional to regard IT aptitude as either the more important, or solely important, competency. Service environments, and learning paradigms, which are now pursued by higher education institutions, require grounding not only in IT but also a wide array of personal and interpersonal skills in order to support collaborative efforts with stakeholders and across the education sector. Librarians must operation as learning technologists, equipped with an understanding of modern pedagogy in relation to the Millennials Generation, but they must also never forget the 'human dimension'.

Conclusions

A review of the literature focused this study by providing a contextual background to the topic of investigation and, consequently, contributed to the development of implicit, or latent, theories (Bryman, 2008). These comprise substantive theories – which conceptualised the study from the theoretical context – as well as empirical literature which demonstrated what had, and had not, been achieved to date in terms of research outcomes (Flick, 2009).

The implicit, or latent, theories which emerged from a review of the literature include, but are not limited to, the suggestions that:

- A distinct generation, or peer group, of individuals – known as the 'Millennials Generation' – exhibit traits and characteristics defined by social, economic, educational and cultural influences;
- Attitudes and outlook among this peer group are defined by generational traits and characteristics, and ultimately influence behaviour – including information-seeking behaviour – and expectations;
- The expectations of Millennials are driven by exposure to, and innate affinity with, technology;
- Millennials consequently place greater demands upon service providers, including academic libraries, in particular for one-stop customisable services, communication without barriers, and access to information and goods without the need for intermediaries;
- Academic library service provision, which has shifted from an information provision paradigm to a customer-centred, educator, paradigm,
- Subject librarians are increasingly required to support IT-driven services, provide learner support, and impart information literacy skills to a generation which exhibits information-seeking behaviour dominated by surface scanning and satisficing. To accomplish this,

subject librarians are increasingly required to adapt to new roles and responsibilities by cross-skilling and multi-skilling;

- In order to better understand the capacity for academic library service provision to meet the expectations of Millennials, there is a need to conduct thorough service performance evaluation using standardised measurement instruments, such as LibQUAL+.

A review of the literature also highlighted limitations and deficiencies, some of which were to be expected. The nature and scope of material which identifies and seeks to understand generational theory and the characteristics of the Millennials Generation, for example, tends to hold a business-oriented focus in which investigations into behaviour and motivation are linked to the purpose of more effectively marketing products to this particular peer group. A 'market research' approach to methodology is often evident. Whilst the nature of the material perhaps limits the rigour of investigation, and the credibility of findings, it does still prove useful for establishing context to Millennials as much as it fails to concretely explore issues such as learning preferences and information-seeking behaviour.

Literature exploring service performance evaluation is also prone to two shortcomings: first, that discussions concerning the relative strengths of a particular model, method or instrument for conducting service performance evaluation often neglect the need to take in to account local library needs and circumstances; and second, that regardless of the merits of a given model, method or instrument, the results of evaluation inevitably rely on the way in which library staff deploy the measurement tool and how they subsequently analyse the data obtained. Literature seeking to review service performance evaluation must therefore, by necessity, rely on the use of case studies in order to support arguments.

A review of the literature illuminated the research questions and the initial problem of this study. This led to the development of a theoretical context which in turn led to the development of a theoretical framework for conducting the investigation as illustrated by Figure 2.2, below. This

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framework then formed the basis for the development of the research
methodology described in the following chapter.
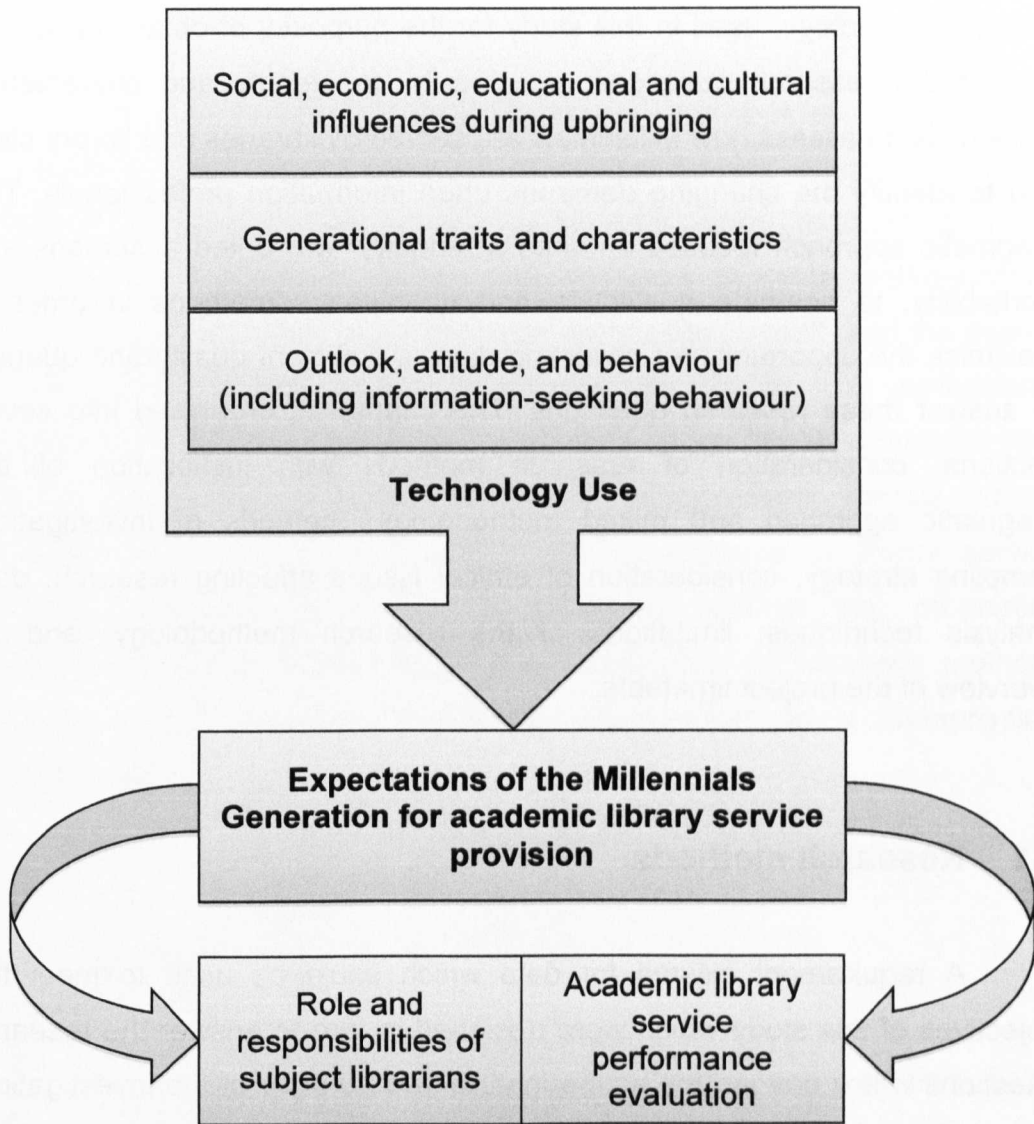
Figure 2.2. Theoretical framework for investigation.

3   Methodology

This chapter examines the pragmatic approach, which consisted of a mixed methodology, used in this study for the purposes of obtaining data to answer the research questions; specifically, to identify and characterise Millennials, to assess how Millennials are served by libraries and library staff, and to identify the changing demands upon information professionals. The pragmatic approach focused on lines of enquiry, warranted assertions and workability, to combine qualitative and quantitative methods in order to maximise the opportunity for collecting data of sufficient quality and quantity to answer these research questions. The chapter is organised into seven sections: consideration of research methods with justification of the pragmatic approach and mixed methodology; methods of investigation; sampling strategy; consideration of ethical issues affecting research; data analysis techniques; limitations of the research methodology; and an overview of the project timetable.

3.1   Research methods

A requirement existed for data which could be used to meet the objectives of this study which were designed in turn to answer the research questions which defined the scope, nature and purpose of the investigation. Data were therefore required which could be used to define the characteristics and self-identity of Millennials (RQ1 and objective i)), the scope and effectiveness of existing library service provision (RQ2 and objective ii)) and the competencies of professional library staff (RQ3 and objective iii)). The methods selected for collecting these data are described in this section of the chapter.

A literature review formed an essential and initial component of the overall research methodology by examining current thinking and previous studies to guide subsequent fieldwork. Specifically the contextualising of the

Millennials Generation, service evaluation, and the competencies required by library staff, was accomplished partly through the literature review. Placing the project in context highlighted those areas which may be lacking adequate investigation or data at present.

Both quantitative and qualitative research methods were suited to the data needs of this project as part of a triangulated mixed-methods approach. A quantitative approach was used to obtain data relating to satisfaction with existing service provision among undergraduate students, self-described competency across skills and knowledge among library staff, and the degree to which staff felt prepared for their current role by any professional education programmes which they undertook. A qualitative approach was used to obtain data describing self-identity/generational identity among undergraduate students, perceptions and expectations of library service provision, and perceptions of the changing role of the information professional among library staff. This combination of research methods emerged from a pragmatic approach, as opposed to a metaphysical paradigm shaped by epistemological stance.

3.1.1 A pragmatic approach

The dominant metaphysical research paradigm, a paradigm being defined by Morgan (2007) as a "consensual set of beliefs and practices that guide a field", is based on a top-down ontological and epistemological stance. Within this paradigm the philosophy of knowledge is a key consideration in shaping research strategy and methods and is defined first and foremost by the perceived nature of reality and social entities (ontology) which in turn produces a stance on the nature of knowledge and of knowing (epistemology) (e.g. Morgan, 2007; Bryman, 2008). This process can be illustrated by Figure 3.1.

The precise terminology used to describe various ontological and epistemological stances lacks consensus within the literature. Within the metaphysical paradigm described by Morgan (2007), quantitative research lends itself to an objectivist ontology[6] in which certain social phenomena imposing upon social actors are independent and separate from those social actors (Bryman, 2008). Culture is regarded as a system of values and customs which constrain social actors by internalising values and beliefs and which 'socialises' individuals into conformity (Bryman, 2008). This ontology has a tendency towards a positivist and deductive epistemology which seeks primarily to explain the behaviour of social actors (e.g. Denscombe, 2003; Morgan, 2007; Bryman, 2008). A 'postpositivist' epistemology still regards social phenomena as independent but acknowledges that phenomena are subject to uncertainty and probability, and cause and effect relationships may exist (Pickard, 2007). In contract, qualitative research lends itself to a constructivist ontology[7], in which (multiple) realities are constructed by social actors, and are therefore holistic and tied to both the individual and therefore context (Pickard, 2007). This view has a tendency towards an interpretivist and inductive epistemological stance which seeks to understand the behaviour of social actors (e.g. Denscombe, 2003; Morgan, 2007; Bryman, 2008).
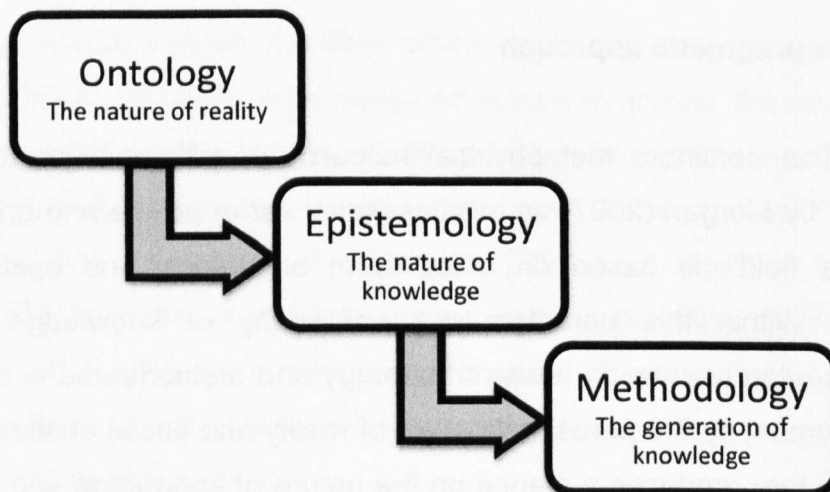
Figure 3.1. The metaphysical paradigm.

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[6] Termed 'realism' by Pickard (2007) adapted from the characteristics described by Lincoln and Guba (1985).
[7] Termed 'relativist' by Pickard (2007), again adapted from Lincoln and Guba (1985).

Positivism, though difficult to define (Bryman, 2008), is generally an epistemology "which seeks to apply the natural science model of research to investigations of the social world" (Denscombe, 2003:299). A positivist approach typically involves the generation of hypotheses which can be subsequently tested – that is, through the principle of deductivism – in a way which is objective (Bryman, 2008). Cronbach (1982) noted that positivism focuses on verification to the detriment of generating new theory. This research project seeks to understand generational identity, and satisfaction with academic library service provision, among members of the so-called Millennials Generation, and the changing nature of roles and responsibilities among subject librarians. The exploration of these perceptions among social actors lends itself, within the dominant paradigm, to an interpretivist – specifically phenomenological – and inductive approach suited to the examination of social constructs (Denscombe, 2003) and those types of data difficult to precisely measure or numerically interpret (e.g. Bogdan & Taylor, 1975; Gorman & Clayton, 2005).

The initial application of an empirical interpretivist approach is attributed to Max Weber (Pickard, 2007), whose work was the basis for the phenomenological approach developed by Shutz (1967). Shutz (1967) identified the importance of understanding the meaning behind human action in relation to the meanings attributed by individuals to social reality. Bryman (2008:16) explains that this approach requires:

> "...the social scientist to gain access to people's 'common sense thinking' and hence to interpret their actions and their social world from their point of view."

An inductive approach, from which theories and themes emerge from findings, contrasts with the testing of a pre-formed hypothesis usually associated with a deductive approach aligned to a positivist epistemology (Bryman, 2008). It avoids the risk of compartmentalising results (Gorman & Clayton, 2005), and the benefits of pattern seeking are useful in the examination of areas in which current literature may be deficient

(Denscombe, 2002) which was a key element of this study. Since data were collected and analysed in a way which enabled the researcher to understand the point of view of study participants (Bogdan & Taylor, 1975) this also suggested an inductive tendency within the research strategy through which generalisable inferences could be borne out of observations (Bryman, 2008).

However, the metaphysical paradigm typically limits substantive questions about what to study, and how to study it (Morgan, 2007), and regards radically different assumptions – that is, the natural scientific application of a realist/positivist/deductive approach versus the naturalistic inquiry application of a constructivist/interpretivist/inductive approach - as so inherently incompatible that it is impossible to relate or translate between paradigms. To operate in one is to reject the other (Morgan, 2007). Whilst the ontological and epistemological stance of this research project lends itself to interpretivist and inductive tendencies, a pragmatic approach was instead favoured. This stemmed from perceived benefits arising from mixing qualitative and quantitative methods within an iterative approach in which data were collected to substantiate theories emerging from initial findings and initial data collection (Bryman, 2008). A truly metaphysical paradigm dictating research strategy precludes the option of mixing quantitative and qualitative methods, despite the pragmatic benefits of doing so, which will be discussed in the subsequent section of this chapter. Indeed, as Morgan (2007) relates:

> "The issue of who controls the list of 'accepted' paradigms is particularly important for methodologists who are interested in combining qualitative and quantitative methods because nearly all the lists proposed within the metaphysical paradigm ignore pragmatism, even though it is the favoured approach within that subfield" (Morgan, 2007:61).

A pragmatic approach moves away from the core epistemological stance of the dominant research paradigm and is instead based upon "warranted assertions about the workability of different lines of enquiry" (Morgan, 2007:66). The emphasis is less on philosophical commitments at

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the paradigm level and more on practical procedures in relation to data collection and analysis (Morgan, 2007). Specifically:

> "on actual behaviour (lines of enquiry), the beliefs that stand behind those behaviours (warranted assertions) and the consequences that are likely to follow from different behaviours (workability)."
> (Morgan, 2007:67).

The pragmatic approach places methodology at the core, to which the abstract ontological and epistemological stance and the mechanical methods are connected (Morgan, 2007). This approach is particularly relevant given that the deductive goals of a quantitative approach (via the use of questionnaires) helped to further the inductive goals of a subsequent qualitative approach (via the use of focus groups) when collecting data from research participants. Indeed, Morgan (2007:70) observes that "any experienced researcher knows that the actual process of moving between theory and data never operates in only one direction". This view is also shared to some extent by Bryman (2008) who notes that epistemology and ontology are best regarded as tendencies rather than overriding clear cut distinctions.

The pragmatic approach adopted by this study combines elements of the quantitative and qualitative, inductive and deductive, and positivist and interpretivist, though Morgan (2007) defines these uniquely and in comparison as illustrated by Table 3.1.

Table 3.1. Comparison of key methodological issues by approach (reproduced from Morgan, 2007:71).

	Qualitative Approach	Quantitative Approach	Pragmatic Approach
Connection of theory and data	Induction	Deduction	Abduction
Relationship to research process	Subjectivity	Objectivity	Intersubjectivity
Inference from data	Context	Generality	Transferability

Abduction enables the researcher to move back and forth between data and theory, generating new theory in an iterative process. In this way each strand of data collection can inform the next. An intersubjective relationship to the research acknowledges that findings can be neither wholly objective (as advocated by the positivist approach) nor wholly subjective (a criticism of the interpretivist approach). Rather, the emphasis is on communication and shared meaning.

Morgan (2007) also ascribes the key concept of transferability of findings to the pragmatic approach, whilst limiting inferences from data to context alone in a qualitative approach. This deviates somewhat from the position traditionally held by qualitative research that findings *are* transferable – based on context – for example by connecting the perceptions of social actors to the social world around them (Miles & Huberman, 1994) through a 'thick description' of data which can then be drawn upon by others for making judgements in other settings (Lincoln & Guba, 1985; Bryman, 2008). The distinction is an important one to make, and to note. Nevertheless, the concept of transferability, advocated by Morgan (2007) within the pragmatic approach, acknowledges that findings are rarely so unique as to be rendered irrelevant to any other context than that of the research project, nor general enough to be applied to any circumstance. Fundamentally the principle remains the same and Morgan (2007) advocates that transferability within a pragmatic approach applies to the use of data and findings to inform, or be used in, new inquiries (Morgan, 2007).

There are potential limitations associated with a pragmatic approach. First, pragmatism is not yet an established or widely recognised paradigm. Indeed, Morgan (2007) explicitly avoids using the term 'paradigm'. Second, a pragmatic approach which draws upon mixed methods to benefit from the strengths of both qualitative and quantitative research will also, naturally, inherit the associated risks and flaws of those approaches. For example, adopting elements of interpretivism brings with it the risk of 'double interpretation' in which the researcher interprets the interpretations of others (Bryman, 2008). An iterative, deductive, approach to data collection risks

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inconsistency by allowing each strand of data collection to inform the next. These potential limitations were mitigated in the same way as a researcher operating within the metaphysical paradigm; for example, by adopting question frameworks for each strand of fieldwork which were then applied with consistency among respondents with a view to improving the possibility for repeatability and ultimately the reliability of findings. It was also essential to utilise multiple sources of data in order to improve the credibility of findings and reduce the risk of researcher bias. The literature review also helped to avoid exclusivity to one specific preconceived theory at the expense of exploring new themes and theories emerging from findings.

A pragmatic approach to the research strategy aligned with the intention of combining qualitative and quantitative research in an iterative process. This made use of inductive and deductive techniques which connected to the core mixed methodology. Theory was generated from findings, and those findings were then used to inform subsequent data collection. This enabled the research questions to be addressed as practically as possible, and in a way which provided greater validity to subsequent conclusions.

3.1.2 Mixed methods and triangulation

A mixed methods approach was adopted, which:

"focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone."
(Creswell & Clark, 2007:5)

There are several benefits to a mixed methods approach. A design of this sort grants the project improved transferability to other research (though

the onus for doing so rests with other researchers). Quantitative data can be compared with qualitative data (and visa versa) to identify similarities or differences in results. Conclusions are therefore more robust through the provision of multiple sources of data which contribute to a more representative set of data from which analysis can take place. Mixed methods permit an holistic view of the research problems being addressed which an individual quantitative or qualitative approach could not provide alone (Creswell & Clark, 2007). Mixed methods also expand the available research instruments which might be used in the data collection process: both quantitative and qualitative dimensions can be explored with a view to addressing the research questions (Creswell & Clark, 2007).

While there are obvious benefits to mixed methods research, there are also several limitations which ought to be highlighted: an approach undertaking both qualitative and quantitative methods takes more time and resources than either approach might require alone, requires more complex procedures for conducting research as a result, and may require of the researcher skills across both approaches to data collection. However, "the values of mixed methods research [seem] to outweigh the potential difficulty of this approach" (Creswell & Clark, 2007:10).

Creswell and Clark (2007) suggest standardised notation be used to describe mixed methods research. This project utilises a QUAN+QUAL approach in which an equal emphasis on both the qualitative and quantitative data sets exists as Figure 3.2 illustrates. Each data set are examined and analysed independently and subsequently as part of a cohesive whole.

Quantitative → Results ← Qualitative
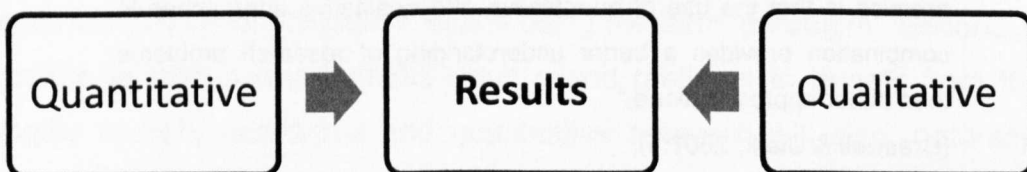
Figure 3.2. QUAN+QUAL approach (Creswell and Clark, 2007:7).

The application of mixed methods research is key: it is "not enough to simply collect and analyse quantitative and qualitative data; they need to be "mixed" in some way so that together they form a more complete picture of the problem than they do when standing alone" (Creswell & Clark, 2007:7). The process used in the application of mixed methods within this project involves merging the data during the interpretation – rather than analysis - phase, as Figure 3.3 indicates. The specific application of triangulation in this project involves the use of a multi-layered approach, as described by Creswell and Clark (2007), and is illustrated by Figure 3.4.

Data were obtained from Millennials through the combination of a web-based questionnaire and subsequent focus groups which enables the validation of, and elaboration on, findings. Each set of data are analysed independently, before being merged during the interpretation phase. These findings are then compared holistically with the findings from the web-based staff questionnaire to ascertain whether staff competencies and perceived skill needs are in line with the user needs and service performance expectations of Millennials.

Quantitative Data Collection
Procedures:
Questionnaire *n=410*
Products:
Numerical item scores

Qualitative Data Collection
Procedures:
Focus Groups *n=13*
Products:
Transcripts

Quantitative Data Analysis
Procedures:
Score responses
Products:
Group classifications
Questionnaire statistics

Qualitative Data Analysis
Procedures:
Content analysis
Products:
Themes
Quotes

Overall Results and Interpretation
Procedures:
Cross referencing
Products:
Tabled responses
Correlations

Figure 3.3. Merging data obtained from Millennials (adapted from Creswell & Clark, 2007:46)
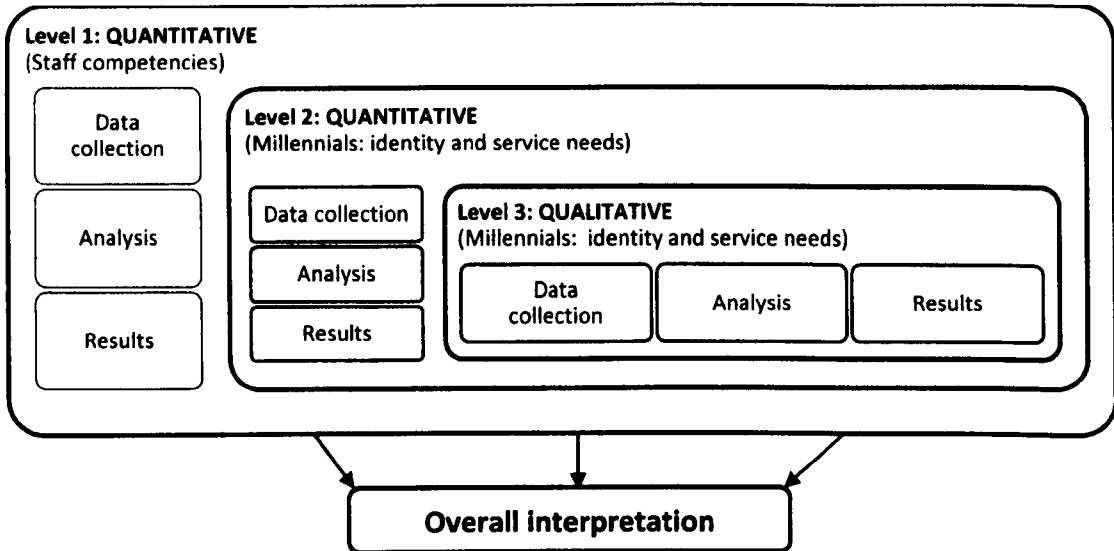
Figure 3.4. Process for multi-layered triangulation of mixed methods (adapted from Creswell & Clark, 2007:64)

A triangulated design "to obtain different but complementary data on the same topic" (Morse cited in Creswell & Clark, 2007:62) allowed the researcher to "directly compare and contrast quantitative statistical results with qualitative finding, or to validate or expand quantitative results with qualitative data" (Creswell & Clark, 2007:62) and also enabled the methodological weaknesses of each separate approach to be minimised.

There are many types of triangulation (Denzin in Flick, 2009) including data triangulation, which is commonly used to secure different data sources (such as studying phenomena at different times, or in different spaces, or with different people) (Flick, 2009). However, this study adopted methodological triangulation through a between-method approach, combining questionnaires with focus groups, to produce "knowledge on different levels...beyond the knowledge made possible by one approach" (Flick, 2009:445). The purpose of methodological triangulation was not to collect more of the same data but rather data on different levels. Focus groups provided richer, deeper, data whilst questionnaires provided broader, more extensive, data. The methods are accordingly "distinct in their focus and in the data they provide" (Flick, 2009:448).

3.2   Methods of investigation

A variety of approaches were used to secure data that met the objectives and purpose of this project. A literature review established the context in which the research was undertaken, a survey of Millennials obtained primarily quantitative data describing resource use and service satisfaction, a series of online focus groups obtained qualitative data characterising this peer group and its opinions on library service provision, and a survey of library staff obtained primarily quantitative data outlining self-described competency with a range of skills and knowledge. This section outlines each approach and any considerations or issues arising from the choices made which collectively determine the project research design.

3.2.1   Literature review

A literature review enables the researcher to demonstrate a familiarity with a body of knowledge, and establish credibility; show the path of prior research and how a current project is linked to it; integrate and summarise what is known in an area; and learn from others and stimulate new ideas (Neuman, 2007). A literature review establishes the current 'state' of knowledge about a particular topic (Neuman, 2007) and places a study in context. The process for evaluating literature is iterative, thematic, and might therefore involve an element of qualitative analysis (Teddlie & Tashakkori, 2009).

A literature review was therefore instrumental for establishing the contextual framework within which this project was seated. This process identified and evaluated existing literature and current thinking to enable the researcher to ascertain where gaps in knowledge or understanding existed to ultimately determine, and refine, the focus and contribution of this study.

The literature review was divided into three areas: current understanding of generational theory and the characteristics of 'Millennials' including the information-seeking behaviour of this peer group; service performance and evaluation; and professional skills and competencies of information professionals (specifically subject librarians). The literature search strategy was documented from the outset, and is described below. It is important to note that a funnel approach was adopted in which extraneous materials were included initially with selected sources gradually refined to those which were most relevant and pertinent (Teddlie & Tashakkori, 2009).

Selection of sources and the limitations of literature

The majority of material relating to Millennials is relatively recent (post 2000) and the literature search strategy for this element was therefore confined to a post-2000 period. Sources used for broader background on the Millennials Generation, and on generational theory, were primarily from Marketing, Business and allied disciplines and some limitations with methods employed by certain researchers were encountered, and noted, during the review. Literature concentrating on service performance evaluation and competencies among staff needed to be current and post-1999 publications were therefore targeted although there was still relevance to be found in established articles (such as those by R.H. Orr in the 1970s). While currency is essential an historical context is still useful; relevance determined the range of literature sought for this element of the review, rather than type or currency, and therefore extended beyond monographs and journals to online resources, articles and research reports; conference papers; and, where appropriate, presentations.

The reliability and authority of certain institutions helped guide literature selection (e.g. materials from CILIP, ALA and other relevant national library associations; OCLC; UK Online, and so on). The need for careful evaluation of online resources was paramount and selection and evaluation of web resources was guided by the *Intute Collection*

Development Framework and Policy (Intute, 2009) when assessing validity, reliability and quality.

Keywords and search terms

A keyword list was established prior to the review, to ensure material remained relevant and within the scope of the project. Appendix A illustrates the way in which keywords and search terms were prioritised. It should be noted that the search strategy was flexible and was adapted according to results. Subject-index terms identified within articles consulted during the literature review also fed into the search strategy in order that further material could be identified.

Key sources

A full range of literature was utilised where appropriate but key resources stood out for extensive use. This included core journals whose relevance was identified from the outset and these were subject to more systematic searching (via current awareness email bulletins used to scan content lists) and include: *Journal of Academic Librarianship, Journal of Documentation, Australian Academic & Research Libraries, College & Research Libraries, Portal: Libraries and the Academy,* and the *New Review of Academic Librarianship.* A variety of databases were also consulted. In order of priority these included: *LISA, Emerald Fulltext,* and *Library Literature and Information Science* for journals and literature in the field of Library and Information Science; *INSPEC* for literature in the field of Information Technology; *ERIC* for literature in the field of Education; *IBSS;* the *ONS/US Bureau of Statistics* and other national data archives for national statistics and population trends; and *Google Scholar* as appropriate. Reference texts were used where appropriate and these included *International Encyclopedia of Information and Library Science* (Feather & Sturges, 2003) along with *Harrod's Librarians' Glossary* (Prytherch, 2005) and the *Online Dictionary for Library and Information Science (ODLIS)* (Reitz, 2006) which assisted with

definitions of terminology encountered within the literature. Past dissertations and doctoral theses on similar topics were consulted including *Index to Theses* (Expert Information Ltd., 2009) and *Networked Digital Library of Theses and Dissertations* (NDLTD, 2009). Library catalogues were used throughout the study to identify relevant materials for review, including *Star* (the catalogue of the University of Sheffield Library), library catalogues at the University of Liverpool and Liverpool John Moores University, and *COPAC* – the national, academic and specialist library catalogue.

Bibliographic management and logging techniques

To conduct the review effectively the researcher created a framework in which bibliographic details were recorded and logged. This helped both in the prevention of duplicating reviewed material and also in guiding the review itself by feeding in to the search strategy and the focus on the content of material being sought.

An initial approach involved identifying bibliographic details and recording these using Microsoft Word. This proved an ineffectual method of managing the bibliography and Microsoft Excel was utilised instead. Whilst EndNote is designed specifically for bibliographic management there are known issues concerning the reformatting of citation styles and in maintaining records of differing material types. While Microsoft Excel is not designed with managing bibliographic content in mind it does permit flexibility in rearranging citations across various headings (by author, by subject, by year and so on) and allows the addition of bespoke notes and customised layouts.

The *Social Science Citation Index (SSCI)* assisted with bibliographic data management and helped form a progressive literature search. Key articles were entered on SSCI to chart a path of citations and references. While this method provides no guarantee on the relevance of the material identified, and risks diverting the focus of the review into tangential areas, it does expose more obscure papers to review which might otherwise have

been neglected during the search process. This approach was considered particularly appropriate during the search for material relating to the Millennials Generation since the quantity of material is somewhat limited in comparison to those other areas of the literature review.

A template form was also designed for recording bibliographic details in a standardised format for those items which were consulted where no computer terminal was available. That is, data entry at a later stage was made possible. The form also maximised recollection by maintaining precise and standardised information.

Database searches entailed a slightly different approach: relevant records were marked using the system provided in most portals and then emailed (optionally formatted and information content tailored depending on the database functionality). This permitted the compilation of specific search results, and the terms used within those searches, and also provided a permanent record which could then be archived and consulted at a later date as necessary. Copies were also printed and filed in paper format. The same approach is easily taken with library OPACs: most offer a 'mark records and email' function.

3.2.2 Millennials survey

A web-based questionnaire was designed and implemented as a means of obtaining both quantitative and qualitative data regarding the perception among Millennials of library service performance at each institution. The questionnaire was also designed to identify preferences for sources of information, and Internet use habits, among Millennials.

A questionnaire was selected for two reasons. Firstly, in recognition of the benefits of standardised measurement instruments such as LibQUAL+ which are internationally recognised and employed, and which also bolster

external validity through the use of a standardised design (Bryman, 2008). And, secondly, in response to the quantitative nature of the data being sought which revolve around numerical scores, hourly totals, and yes or no answers.

Web-based deployment was believed to be one of the best ways of reaching the sample population since this approach has been highlighted as an economical, efficient and effective means of obtaining data from respondents, particularly students, and in reaching non-users (e.g. Babbie, 1990; Solomon, 2001; Fowler, 2002; Mitra, et al., 2008). A web-based approach was also selected to maximise the overall response rate and to provide for easier collation and analysis techniques through a solution which avoids hand-coding and permits the export of data to spreadsheet software. Large numbers of students in numerous locations across England were targeted for the sample; the information required was considered to be straightforward; and the data to be obtained was standardised through the use of identical questions, making a questionnaire an appropriate choice of instrument (Denscombe, 2003).

Survey design

Questions were grouped into six topics: sample characteristics, resource use, computer and Internet access, Internet use and study behaviour, satisfaction with library service performance, and service priorities (see copy of survey instrument in Appendix C). These topics were selected in order to obtain data which would assist with research objectives two, three, and four, within the limited scope of a short web-based questionnaire. Questions about resource use covered both university/library delivered resources and a range of sources delivered by third parties, allowing for a comparison of these two categories. A range of question types was used including dichotomous, open, scaled (semantic differential and rating), matrix, selected and specified, each chosen for relevance, efficiency, and effectiveness. The survey design also drew partly on the LibQUAL+

instrument (ARL, 2009) with the agreement of the Association of Research Libraries (ARL) (see correspondence reproduced in Appendix B). The design was standardised across all institutions taking part in the project to bolster the validity and reliability of findings. Questions were neutrally worded to minimise bias (Nolan & Behi, 1996), and the use of the same instrument across different institutions enabled not only institution-specific analysis but also benchmarking across participating institutions.

LimeSurvey was selected for delivering the questionnaire because it offered the required functionality, security, and was highly customisable. The design prevented any individual both from registering more than once and completing the questionnaire more than once, thus ensuring the integrity of the data, and allowed respondents to save their progress midway through answering questions and return to complete the questionnaire at a later date or time if desired.

Pilot testing

The questionnaire was pilot tested by five students at the University of Sheffield within the Department of Information Studies during September 2007. The pilot was designed to test the integrity of the questions, the efficiency of using a web-based instrument, and the length of time required to complete and submit a finished questionnaire response. Feedback from the pilot test enabled the wording of several questions to be clarified, some typographical or other errors to be corrected, and a mean response time to be gauged (with those taking part reporting an average of 14 minutes to complete and submit a questionnaire). The pilot was instrumental in finalising the design before implementation at the four participating universities.

Deployment

The questionnaire was deployed in two phases across four institutions. Posters were designed in A3, A4, and A5 sizes for universities to display within library buildings. Marketing and promotion was based on local institutional practice: some of the participant libraries were able to contact students through email, or through departmental mailing lists, while others were able to promote the questionnaire via links on student portals, library websites or the virtual learning environment.

A minimum desired response level of 50 from each institution was established as a useful quota from which generalisations could be made. Overall 410 usable responses were received after a second phase was conducted at Institutions B and C in order that an attempt could be made to reach the desired quota. Institution D was unable to deploy in the first phase and therefore the survey was implemented only once, during the second phase. This institution recorded the lowest response level overall (25) and this may be influenced by the lack of an initial first phase deployment. Institution A, which deployed the questionnaire on time during the first phase, recorded the highest response level (304) and a second phase of deployment was not required as a result.

The response level was almost certainly influenced by the marketing and promotion techniques used at this institution which differed dramatically from others: the use of direct email promotion to students aged 18-24, the involvement of the Student's Union, the use of departmental mailing lists, and advertisement on the library website, all contributed to a response level which was overwhelmingly larger than that at other institutions which did not or were unable to utilise such methods. Institution B recorded 27 responses, and Institution C recorded 54 responses, with only half of the institutions therefore recording the minimum desired response level.

3.2.3 Millennials focus groups

A series of online focus groups were designed and implemented as a means of obtaining qualitative data to bolster the quantitative dataset obtained during the earlier survey of Millennials and again were intended to ascertain self-identity and perceptions among Millennials of library service performance at each institution. This formed part of the triangulated mixed methods approach in which the limitations of one type of data (qualitative or quantitative) can be offset by obtaining a dataset of the other type.

Focus groups are "a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment" (Kruger in Litosseliti, 2003:1). Since they also help to elucidate a wide variety of different views held on a particular issue (Bryman, 2008) they are also particularly appropriate for eliciting the views of Millennials on self-identity and satisfaction with service performance, with data enriched by an exploration of peer group dynamics.

The online focus group approach

Online focus groups (OFGs) have been used within marketing and business since the mid-1990s (e.g. Clapper & Massey, 1996; Monolescu & Schifter, 2000) but only recently been subject to methodological scrutiny. Recent research has largely concluded that the quality and quantity of data obtained is equivalent to that obtained from traditional face-to-face (FTF) focus groups (e.g. Underhill & Olmsted, 2003).

An OFG approach was selected for three reasons: to overcome some of the limitations which exist for FTF focus groups; to engage with Millennials in a setting with which they are familiar and comfortable; and, since "the

research question involves an online social phenomenon[8], [then] a potential strength of the method is to be researching in the location of interest" (Gaiser, 1997:136). OFGs are also described as a useful means of engaging with those who are "generally comfortable with the online environment, [are] not intimidated by the technology and [are] neither shy nor reserved in sharing their thoughts and ideas" (Chase & Alvarez, 2000:362). An OFG approach tackles the problem of peer pressure among young people which may be exacerbated by face-to-face contact (Chase & Alvarez, 2000:365) since "kids are more willing to disagree with what someone else has said when they aren't looking that person in the face..." McGee (1997:54). There are also practical limitations to FTF sessions which can be addressed by an online instrument. Costs, which might arise from travel, room hire, and equipment needs, can be reduced (Clapper & Massey, 1996); the geographical restrictions of face-to-face sessions can be overcome by enabling participants to engage in discussion regardless of their location (and in the comfort of their own surroundings); and a rapid turnover of data collection, through automated transcript creation, can be achieved (e.g. Chase & Alvarez, 2000; Schneider et al., 2002). Since students are already using the Internet as a means of communicating their expectations (Monolescu & Schifter, 2000:176) then the OFG method is particularly suited to the undergraduate population from which a sample is required as part of this element of fieldwork.

OFGs also provide more balanced findings than traditional FTF sessions by encouraging a more egalitarian environment arising from greater anonymity (e.g. Kiesler, 1994; Clapper & Massey, 1996; Schneider, et al., 2002). Anonymity does have its limitations, including an elevated risk of intra-group conflict and conflict between participants and the moderator, but while this sort of contention may increase the complexity of facilitation it also provides a richness in the data (Gaiser, 1997:142). Non-contributors may also be less conspicuous in an online setting (Chase & Alvarez, 2000). This

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[8] The online social phenomenon being the shaping of views and attitudes among members of the Millennials Generation, as alleged within the literature, by the Internet and online resources and activities.

can be offset by increased levels of moderator intervention which have already been flagged as an essential element of facilitating synchronous discussion.

Two sessions, at each university, with a group size of between four and six participants for each session was deemed suitable for three reasons: first, the number of participants provides for valid findings; second, the larger the group size the smaller the opportunity for each individual participant to offer information; and third, the OFG medium requires participants to both read and type resulting in longer response times. The larger the group the more diluted the content provided by each participant overall, and a group of four can still yield valuable data (e.g. Morgan, 1997; Litosseliti, 2003; Brophy, 2006). Holding multiple sessions also bolsters the validity of findings and permits the researcher to overcome restrictions on group size which might otherwise limit the total number of participants.

Online focus group design

The question structure for focus groups was determined prior to the decision to undertake sessions using online synchronous discussion (see online focus group discussion framework in Appendix E). The medium did not affect the line of questioning. A discussion framework bolsters reliability by providing a greater degree of repeatability through consistency in the treatment of each set of participants.

FlashChat was selected after reviewing several possible synchronous discussion tools, including MSN Messenger, which were rejected for the lack of required customisation, possible pitfalls with usability (in that some respondents may have been familiar – and had an advantage – with using certain technologies whilst others may not have been), and the potential risk that participants would need to reveal personal data (private email addresses). FlashChat overcomes each of these limitations. The public website through which students logged in to the chat service and contributed

to the discussion required the use of a username and login supplied to each participant, along with the focus group structure and questions, and a brief explanation of how to use the chat service, before the sessions took place. Once a session had concluded, the login details for participants were deleted, preventing them from logging in to other sessions. Responses were time-stamped and stored within a secure database; data could then be exported. The production of an automated session transcript is a significant advantage to the OFG approach: the risk of transcription errors is negated and discussion can be moderated without neglecting or interrupting the flow of discussion by note taking (Bryman, 2008), as well as evading the most time-consuming element of conducting face-to-face focus groups (i.e. transcription of audio recordings).

Pilot testing

The online focus group instrument was pilot tested in March 2008 with a group of four research students at the University of Sheffield. The session lasted one hour and a half (30 minutes over schedule) and enabled some alterations and improvements to the design following feedback from respondents. These alterations included: the incorporation of font colour changes to enable participants to distinguish between responses from fellow students; amendments to the focus group question structure in light of the fact that the session overran; and the inclusion of several points of information on the participant information sheet to highlight the nature of synchronous discussions and to reassure participants that replying 'out of sync' would be acceptable.

The pilot test proved that an online approach can be an effective means of conducting focus groups and obtaining qualitative data from a range of participants. Limitations which had been highlighted within the literature – such as increased moderator activity and lengthier discussion times as a result of the nature of discussion – were observed to be true; efforts were made to minimise the impact of these where possible which

included increasing the specified length of the session and acknowledging that increased moderator involvement would be essential.

Deployment

The online focus group sessions were scheduled in two phases across the four participating universities. The first phase offered two sessions at each university making for a potential sample of 12 students at each university and 48 in total. A single session was offered in a second phase where turnout was low at a given institution, where students expressed an interest in taking part but were unable to make one of the designated sessions in the first phase, or when students signed up to a session but failed to turn out on the day. The potential sample size was therefore 72 in total but only 29 students expressed an interest in taking part. Only 13 students subsequently took part.

Marketing and promotion was based on local institutional practice: all universities displayed A4-sized posters which advertised the focus group sessions, while Institutions A and C also promoted sessions through links on student portals and library websites.

Institutions A and B did not wish to take part in a second phase of focus group sessions; a Microsoft Word-based questionnaire was instead deployed via library websites and student portals which followed the focus group question schedule with a space beneath each question for the respondent's answer. This approach was more in line with an interview than focus group but was still considered valuable since it ultimately obtained the qualitative data which was sought.

3.2.4 Staff survey

A web-based questionnaire was designed and implemented as a means of obtaining quantitative and qualitative data describing staff roles, skills, competencies and education among subject librarian/liaison staff at the four participating universities.

A web-based questionnaire was chosen as a relevant and effective means for obtaining data from a large number of respondents; for ease of distribution at four UK universities; to maximise potential return rates by making it as convenient as possible to participate; for ease of collation and analysis through the ability to export stored data to spreadsheet software; and to assess competency with using web-based tools and resources. Utilising the same approach for staff as was taken for surveying Millennials also provides some consistency and therefore strengthens the reliability of the research.

Survey design

The questionnaire was designed by grouping questions into three categories: demographic characteristics, skills and knowledge, and teaching and student interaction (see copy of survey instrument in Appendix H). A range of question types were used including dichotomous, open, scaled (semantic differential and rating), matrix, selected and specified; these were chosen for relevance, efficiency, and effectiveness. The design was standardised across all institutions participating in the research to bolster the validity and reliability of findings, and to enable not only institution-specific analysis but also benchmarking across participating universities. LimeSurvey was selected for delivering the questionnaire, once again, for the required functionality, security and ability to customise. The sample population was pre-registered by the researcher through the use of automated email invitations which prevented responses from being submitted by those outside the sample selection criteria: this ensured the integrity of data. Respondents

were able to save their progress at any stage and return to complete the questionnaire at a later date or time if desired.

Pilot testing

The survey was pilot tested by subject library and liaison staff at the University of Sheffield during February 2009. The pilot assisted with finalising the questionnaire design before deployment; staff indicated that additional "don't know" or "not sure" answers would have been preferred for some questions, and the time to complete the questionnaire was assessed to be between 10 and 20 minutes long, which was as expected.

Deployment

The questionnaire was deployed in a single phase across all four participating institutions; institutional contacts at each of the four universities consented to the pre-registration of 83 members of staff who had been identified during the sampling strategy. These members of staff were then sent an automated invitation, by email, to participate in the survey. The invitation email provided a unique token-based web address for each participant to enable them to complete a questionnaire online, which also guaranteed the integrity of the data obtained. Of the 83 potential respondents an actual response rate of 53 was recorded.

3.3 Sampling

Given the scope and scale of this research project it was necessary to undertake fieldwork with samples taken from a wider population of Higher Education Institutions (HEIs) in the UK, information professionals, and students. All sampling strategies have their limitations but it is essential to choose an approach suited to the research design and the research questions (Pickard, 2007). The sampling strategy in this study was therefore directed by the nature of the data being sought and the method deployed to acquire those data. Given the mixed methods, pragmatic, approach, it was appropriate to utilise mixed methods sampling techniques in a combinination of purposive techniques, to answer the research questions, as advocated by Teddlie and Tashakkori (2009). The sampling strategy was not designed to produce inferences about the wider population as would be the case with solely quantitative research (Pickard, 2007), nor was it limited to producing detailed insight into a specific case as would be the case with solely qualitative research (Pickard, 2007). The intention of the sampling strategy was to select a sample in each strand of fieldwork aimed at producing findings with transferability as defined by and promoted within the pragmatic approach. A multilevel mixed methods sampling strategy was therefore used, which is particularly suited to the educational setting (Teddlie & Tashakkori, 2009), and is illustrated by Figure 3.5.

The multilevel strategy consisted of four elements each linked to the methods of investigation. First, the selection of institutions at which fieldwork was undertaken; second, selection of a sample of students aged 18-24 for a survey intended to examine satisfaction with library service performance among Millennials; third, selection of a sample of students aged 18-24 for the series of online focus groups intended to examine the peer group characteristics and service concerns of Millennials; and, finally, selection of a sample of information professionals for a survey intended to explore skills and competencies and the relationship of these to academic library/information qualifications.

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There are reasonable constraints to consider in any sampling strategy and these can direct subsequent decision making. The scope of the project, for example, limited prospective locations for conducting research to Higher Education Institutions (HEIs) and to academic libraries since the investigation was concerned only with undergraduates who were identified as Millennials. The scope also excluded individual library users (and non-users) who were born outside of the period 1981-2002 in keeping with the generational location of Millennials as described within the literature. Practical constraints, such as time, cost, access, and approval, also unavoidably imposed limits upon sampling techniques. It was therefore appropriate to take these constraints into account and consider the accessible population from which it was possible to collect data (Teddlie & Tashakkori, 2009) when formulating the sampling strategy.

Sampling Higher Education Institutions (HEIs)	
Stratified *purposive* sampling (geography, university status)	*Purposive* typical case sampling

Sampling students within HEIs (survey)	
Purposive criterion (complete collection) sampling (all 18-24 year old undergraduates)	

Sampling students within HEIs (focus groups)	
Purposive criterion (complete collection) sampling (all 18-24 year old undergraduates)	Random *purposive* sampling (every 3rd survey respondent from survey)

Sampling subject librarians within HEIs	
Purposive a priori criteria sampling (staff supporting 18-24 yr old undergraduates)	*Purposive* reputational case sampling

Figure 3.5. Multilevel mixed methods sampling (adapted from Teddlie & Tashakkori, 2009:191).

3.3.1 Higher education institutions

HEIs were selected using mixed methods stratified purposive sampling across six strata (two types of age of university status and three geographic regions in England). Given the number and subgroups of HEIs in the UK a sampling technique suited to accounting for geographical spread, and age of university status, was deemed an appropriate means of identifying suitable institutions. Although cluster sampling, a probability sampling technique suited to accounting for geographical spread in quantitative research (Pickard, 2007; Teddlie & Tashakkori, 2009), might also have been an appropriate choice it was intended that information-rich cases would be selected consequently, in a purposive manner, in contrast to the random sampling typically interwoven with cluster sampling (Teddlie & Tashakkori, 2009).

Age of university status was considered an important factor in the sampling technique because post-1992 HEIs (such as those in the million+ mission group, formerly the Campaign for Mainstream Universities (CMU), and those who left the CMU to join the University Alliance) are teaching oriented; support non-traditional student demographics (in social and cultural terms); and provide a style of learning often suited to regional or local intakes. Pre-1992 HEIs (such as those in the Russell Group or 1994 Group) are, in contrast, generally more research oriented with a more traditional student demographic. The UK Government Office Regions framework (ONS, 2004c) was used as the basis for identifying HEIs by geographical location in the first instance. The framework informed a comprehensive and reliable list of HEIs from which academic libraries were selected.

Utilising a mixed methods stratified purposive sampling technique to account for geographic spread in the first instance also addressed practical constraints, a benefit acknowledged by Teddlie and Tashakkori (2009). For the purposes and scale of this study three regions were selected to provide for a sufficient level of participation to improve the transferability of findings. These were limited to the English Regions, in recognition of sampling from

an accessible population, and included: North West, Yorkshire and the Humber, and the South East. The second stage of the sampling technique then identified HEIs upon the age of university status dimension (post-1992 institutions and pre-1992 institutions). The final sample therefore had six HEIs in total: one pre-1992 North West, one post-1992 North West, one pre-1992 Yorkshire and the Humber, one post-1992 Yorkshire and the Humber, one pre-1992 South East, and one post-1992 South East. The individual HEIs were then selected purposively, in a manner similar to typical case sampling, with the intent of selecting a sample of institutions which were typical, normal and representative of the wider population (Teddlie & Tashakkori, 2009).

Library service heads at the selected institutions were approached by email, with an attached letter of invitation to participate in the project (see correspondence template in Appendix B). In return for a commitment to participate, and to support the project fieldwork, each university was given a guarantee of anonymity in the written publication of findings in light of the fact that findings are benchmarked during analysis. All six institutions approached in this manner provided consent and agreed to take part in the project. Five of the six library service heads assigned an institutional contact with whom the researcher liaised during the deployment of research instruments.

While the institutional sample population was initially comprised of six HEIs it became evident that two – both from the North West region – were unwilling or unable to support the project. In order that the project timeframe would not be jeopardised, or the other participating HEIs inconvenienced, it was decided that the project would continue without the participation of the North West region. The final sample therefore consisted of four HEIs (one purposively selected HEI per stratum): one pre-1992 and one post-1992 from Yorkshire and the Humber, and one pre-1992 and one post-1992 from the South East. This was still considered a sufficiently large enough sample from which to yield valid and valuable data. Although this investigation did not adopt a case study approach it is perhaps useful, for context, to note that the

general rule of thumb proposed by Teddlie and Tashakkori (2009:183) is for "case studies of institutions [to] vary from a minimum of four to twelve organisations...".

3.3.2 Millennials survey

The second strand of the multilevel mixed methods sampling strategy was designed to produce a sample of library users and non-users for a survey of Millennials. While probability (specifically simple random) sampling from institutional student databases would have bolstered the external validity of findings (taking, for example, every *nth* student) it was not possible owing to data protection concerns at each participating HEI. Probability sampling is particularly valuable to research from which generalisations about the wider population are being sought (Pickard, 2007), and improves the representativeness of findings (Teddlie & Tashikkori, 2009). This was mitigated by the focus of this study which was concerned with specific criteria (age group and programme level) and consequently all members of the population which met these criteria were duly selected for the sample using a criterion (or complete collection) sampling technique. Responses from individuals who failed to meet the criteria were discarded.

Given the unknown size of the population it is possibly worth considering the extent to which the resulting sample size, when using a criterion sampling technique, reflects the population. Teddlie and Tashakkori (2009) describe a method for doing so, using a standard confidence limit of 0.5 (implying a 95% chance that the sample is representative of the population), with an infinite population size which estimates the sample to be taken from an estimated population of 9,604, concluding that the overall sample size would need to be 384 in order for there to be confidence that it represents that unknown, or infinite, population gauged to be 9,604. In the event, 410 usable responses were received, yielding a sample which was considered sufficiently extensive to address the research questions and

objectives and which, as an aside, also satisfied the confidence limit using the method described above.

3.3.3 Online focus groups with Millennials

The third strand of the sampling strategy was designed to produce a sample size for online focus group participants at each institution, which took place following the conclusion of the survey of Millennials which had made use of a web-based questionnaire. A sequential mixed methods sampling technique was employed, using random purposive sampling in the first instance followed by criterion (complete collection) sampling to expand the potential sample size. Random purposive sampling was used to select every 3rd respondent who had submitted a questionnaire during the survey of Millennials, with the intention of improving credibility of findings by generating qualitative data to complement the larger, quantitative, dataset obtained from the survey (Teddlie & Tashakkori, 2009). This strategy permitted the researcher to both follow up preliminary findings from the survey of Millennials and also allow new insight to be obtained from participants who had not previously taken part in the research project. The overall effect of this approach was to ensure that the sample for online focus groups would yield sufficiently rich information to satisfy the project's research questions.

It was anticipated that two sessions at each institution, with group sizes between four and six in each session, for a total of between 32 and 48 participants, would yield sufficiently rich enough, and valuable enough, data (e.g. Morgan, 1997; Litosseliti, 2003; Brophy, 2006). A second phase of deployment was considered as a result of poor turnout in a first phase, which ultimately produced a potential sample size of 72. In the event, 29 individuals expressed an interest in taking part and of these only 13 subsequently did so. Data yielded from these 13 participants was still considered sufficiently rich enough to be valuable, though no claims are made that representativeness was achieved on the basis of this level of participation.

3.3.2 Staff survey

The fourth, and final, strand of the sampling strategy required the selection of participants for a survey of library staff. A priori criteria sampling was deemed an appropriate means of identifying eligible participants. A priori criteria sampling provided for the basic scope of the survey to be used as a framework for identifying eligible participants whilst still allowing the purposive selection of information-rich cases (Pickard, 2007). Only those staff with responsibility for supporting the teaching and learning of undergraduates in the 18 to 24 year old age group fell within the criteria. An initial review of library website staff listings took place to ascertain the range of roles which would likely fall within the criteria, and these included traditional subject roles, subject liaison, information literacy and other library-based learning and teaching, roles.

Reputational case sampling, which relies upon the recommendations of key informants when the researcher has insufficient information to select a sample and must therefore depend upon the opinions of experts (Teddlie & Tashakkori, 2009), was deemed the most effective and appropriate means of populating the framework. The institutional contact at each participating HEI was therefore asked to put forward recommendations and identify appropriate prospective participants.

A total of 83 staff across all four universities were therefore identified. A response rate of 50% or greater (>41 responses) was considered to be an ideal minimum rate for bolstering the validity of findings. In the event, 53 responses were received.

3.4 Ethics

It was essential that the research undertaken during this project, which involved social actors, met ethical standards which "help protect the dignity, rights, safety and well-being of people participating in University research" (University of Sheffield, 2007a). Proposals for fieldwork undertaken in this project were scrutinised under an ethical review process, and deemed to satisfy these standards. Participants were given an information sheet, and asked to provide informed consent before taking part. The participant information sheet for the survey of Millennials can be found in Appendix J. The participant information sheet for online focus groups can be found in Appendix K. Consent was requested, and provided, by participants at the point of starting the web survey or entering the synchronous discussion area in the case of online focus groups. It is worth briefly highlighting the reasons why ethical issues need to be considered and how concerns were factored into the research design.

3.4.1 Avoiding causing harm

All research participants were able to contribute from safe and secure locations of their own choosing as a result of the electronic medium of the research instruments being used. Participants were "no worse off at the end of their participation than they were when they started" (Denscombe, 2003:136). Whilst supplying question guides in advance of the sessions was intended to reduce anxiety, and while intrusive, sensitive or belief-threatening questions were excluded (Bryman, 2008), there is always a risk that some participants may find group discussion stressful, particularly if they inadvertently reveal more than intended. The researcher could not take any steps to prevent this from happening but simply ensured that all reported findings are appropriate to the research itself and participants given anonymity.

3.4.2 Honesty and informed consent

Information sheets were provided to prospective participants to disclose the project purpose and methods and ensure informed consent was acquired (Denscombe, 2003; Litosseliti, 2003). Litosseliti (2003) advises that expectations be made clear to participants and in particular that they be reassured that individuals are:

- Free to talk;
- Not pressured into speaking, or to speak in a specific way;
- Not expected to reach consensus, or even provide answers;
- Able to decide what, and how much, information to disclose to the group;
- Expected to understand that what *they* hear is confidential.

This advice was considered and acted upon in the design of information sheets given to participants.

Research purposes were disclosed to library service heads as part of the invitation to participate (see Appendix B), web survey respondents were given information via a welcome screen (see Appendix J) and focus group participants were supplied with an information sheet and topic guide at the point of invitation (see Appendix K). All research instruments asked participants to acknowledge their understanding of the research objectives and required (and obtained) their consent for taking part. Each instrument was designed to permit respondents to withdraw consent and participation at any stage.

Incentives to encourage participation were also used. Financial incentives can be a valuable means for encouraging participation and demonstrating that the researcher respects and is grateful for the time a respondent has given to take part (Birnholtz et al., 2004). Since incentives were provided by the researcher and not the parent institution then

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participants may also be reassured that the research is independent. Whilst cash incentives are more reliable (Birnholtz et al., 2004) it was felt that, in light of the scope of the project, vouchers would be an effective enough incentive; two prize draws were therefore conducted: the first for a £10 voucher for those participating in the survey of Millennials, and the second for a £20 voucher for those students who participated in focus groups.

3.4.3 Protecting privacy

Anonymity within published findings should extend beyond making sure that participants cannot be identified to ensuring that participants are not *identifiable* (Bryman, 2008). While participants have not been named (by employing pseudonymisation) the researcher took further steps to ensure that individuals cannot be identified by the content of their contribution or the characteristics of the sample used (true anonymisation).

Participants also enjoyed the right to decline answering certain questions, no sensitive issues were explored within the research, and non-descriptive alphabetical or numerical descriptors were used when it has been necessary to highlight a particular response. In accordance with Data Protection requirements all data were held securely on a password protected remote server and stored only as long as was necessary for the purposes of the project. The use of bespoke software solutions for research instruments also contributes to enhanced data protection since no materials, at any time, were available to third parties (as would be the case with services such as *SurveyMonkey.com*). The precise conditions for the handling of data were covered by the University name: that is, the University of Sheffield is the named 'data controller' and the researcher was not personally required to inform the Information Commissioner about the data being kept.

3.5 Data analysis procedures

Data analysis is an essential step in the research process in order that the researcher might summarise important features following an interpretation of findings which provides meaning to the data (Neuman, 2007). In light of the multilevel mixed methodology in which quantitative and qualitative data were obtained, it was necessary to consider appropriate means of analysing both datasets:

> "Mixed methods data analysis involves the processes whereby QUAN and QUAL data analysis strategies are combined, connected, or integrated in research studies" (Teddlie & Tashakkori, 2009:263)

A sequential mixed methods data analysis technique was chosen in order that the analysis of qualitative data could be expanded from an initial understanding gained from prior analysis of quantitative data. That is, the analysis of qualitative data depended upon and emerged from an analysis of quantitative data (Teddlie & Tashakkori, 2009).

This technique was both exploratory and confirmatory in that the analysis of qualitative data was intended to expand the understanding of quantitative data, and explore the extent to which findings from qualitative data analysis confirmed findings from quantitative data analysis (Teddlie & Tashakkori, 2009).

Although the analysis of quantitative data could be considered distinctly and independently of the qualitative data which were obtained, the approach which was taken was intended to form themes, confirm these, and expand on available information (Teddlie & Tashakkori, 2009). The sequential mixed methods data analysis technique is summarised in Figure 3.6.

Millennials survey	Focus groups	Staff survey
QUAN	QUAL	QUAN
(Initial)	(Exploratory)	(Confirmatory, exploratory)
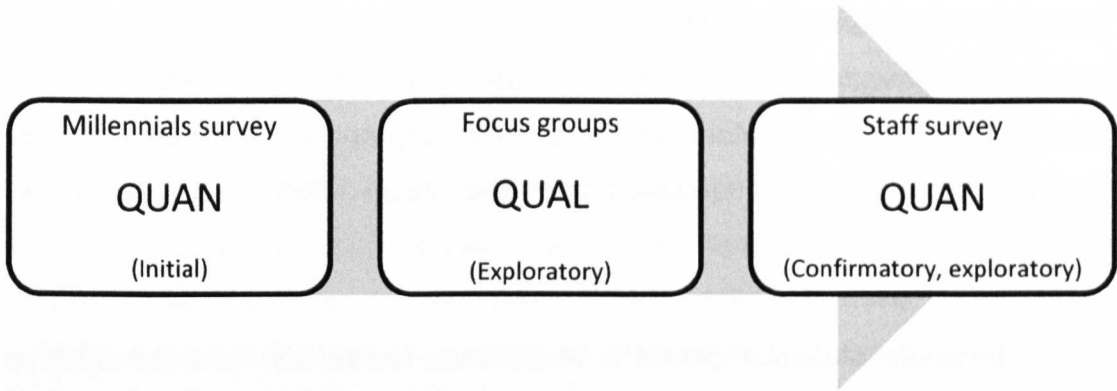
Figure 3.6. Sequential mixed methods data analysis.

The analysis of quantitative, or qualitative, data does not necessarily relate to the epistemological position of the research strategy – that is, qualitative analysis is not always inductive, nor is quantitative analysis always deductive (Teddlie & Tashakkori, 2009). The process undertaken in this study acknowledged this, and was iterative, inductive and eclectic, with the intention of producing categories and themes as a consequence of moving back and forth between data collection and data analysis (Teddlie & Tashakkori, 2009).

In light of the mixed methodology the instruments which were deployed collected a combination of both qualitative and quantitative data. Questionnaire instruments were used to obtain quantitative data from a survey of Millennials and a survey of library staff. Descriptive statistical analysis of quantitative data, with the intent of summarising data and uncovering trends, patterns and similarities (or contrasts) (Blaikie, 2003; Neuman, 2007; Teddlie & Tashakkori, 2009), was considered the most appropriate technique for analysing data obtained from these two instruments. Since the multilevel mixed methods sampling strategy primarily made use of purposive sampling techniques, inferential statistical analysis – based on random sampling strategies – was not considered appropriate given its focus on formulating generalisations, about the population, from findings. Both instruments contained questions which made use of interval and ordinal level scales and a descriptive statistical analysis technique was therefore used to provide measures of central tendency, including mean,

mode and median scores as appropriate, to summarise information about one or other variable in a single number (Neuman, 2007). Measures of variation, by calculating standard deviation as appropriate, were also used to indicate how far scores deviated from the mean (Teddlie & Tashakkori, 2009).

Bivariate statistics permit a researcher to identify, and describe, a relationship between variables in order to assess covariance or independence (Blaiki, 2003; Neuman, 2007), from which hypotheses might then emerge. Bivariate analysis was used to produce gap scores between the minimum expectations, desired performance, and perceived performance, among Millennials of specified library services, in order to determine service adequacy and service superiority. Radar charts were developed to depict the relationship between these variables for each individual service and across the three thematic areas into which services were grouped (affect of service, library as place, and information control). Bivariate analysis was also used to compare variables intended to identify when Millennial respondents made use of the Internet in the day and when they spent time studying and a resulting correlation was produced in the form of a bar chart. Bivariate tables, useful for presenting bivariate statistics (Neuman, 2007), were also used to illustrate findings as appropriate including a comparison of information resources by selection and use according to motivation among Millennial respondents.

Frequency distributions were also illustrated using bar charts and pie charts (Neuman, 2007) to depict associated univariate and bivariate statistics. For example, bar charts were used to illustrate the mean number of hours spent both on scholarly, and on personal, Internet use each week among Millennials. The age and level of academic library/information qualifications held by subject librarians were also illustrated in this way.

Analysis of qualitative data necessarily required a different approach given that it is concerned with the analysis of large amounts of rich, detailed, descriptive data (Pickard, 2007). Constant comparative analysis, developed

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by Strauss (1987), focuses on comparing data to identify similarities and differences in order to establish relationships: such an approach "demands that the creation of categories is driven by the raw data and not established a priori..." (Pickard, 2007:241). Three steps were involved in the analysis of qualitative data using the constant comparative approach. The first of these involved open coding, to 'deconstruct' and examine data to ascertain similarities and differences by asking whether other participants held similar beliefs/views or whether certain themes appeared evident. At this stage thematic categories of content emerged. The second stage involved axial coding, in which validation of thematic categories took place with the renaming, removal, or division of categories taking place as necessary. The final stage of the process involved selective coding during which thematic categories of content were finalised and no new relationships or dimensions emerged (Pickard, 2007). Tables were created during the process to organise the codes and display relationships. Axial codes, and the selective codes to which they were subsequently related, are listed alongside a selection of the more prominent open codes, in Appendix G.

During the process of constant comparative analysis it was important to distinguish between what participants found interesting and what they found important (Morgan, 1997), noting that neither the group nor the individual constituted a separate 'unit of analysis'. Analysis of focus group data was therefore considered in a balanced and cohesive manner (Morgan, 1997) and selectively; only those data which were relevant to the research were analysed (Bryman, 2008). To engage with the constant comparative approach, transcripts from online focus groups were produced from discussions and then imported into Microsoft Excel. Each line of discussion was then numbered. Substantive statements, reflecting an attitude, were identified (Gillham, 2008) and added to a grid to facilitate comparison (Knodel, 1993). Categories were then developed from this holistic review of the overall dataset to impose some sense of order on the answers which had been obtained (Fowler, 2002) and responses were then assigned to these. This process of thematic coding helped to organise qualitative data in an

efficient manner (Denscombe, 2003). The constant comparative approach therefore resulted in the formulation of key themes which emerged from qualitative data though individual responses were still quoted verbatim in the presentation of findings where it was necessary to highlight a particular issue.

3.6   Limitations

There are a number of limitations to the methodology employed within this research project. It is important that these limitations be recognised and described, and effort made to overcome potential risks to the validity and reliability of findings.

Researcher bias

It is inevitable that an element of researcher bias may affect investigations and theory development (e.g. Gorman & Clayton, 1997; Denscombe, 2003) although this can be offset by the mixed methods approach and detached online methods of investigation. The online focus group instrument is particularly at risk of diminished validity as a result of the need for an enhanced moderator role for the researcher. This can be negated in part by the use of a structured approach as has been taken, and by establishing likely prompts beforehand rather than ad-hoc during sessions. The content analysis approach taken with handling data obtained during focus groups also reduces the likelihood of researcher bias in the presentation of findings.

Limitations of the survey method

The threats of instrumentation and test effect (Behi & Nolan, 1996) were reduced by using the same framework for questioning across all universities and by avoiding pre-tests and excluding pilot data from the final

analysis. There is a danger of categorisation (Line, 1982) from listing preselected items which may inform respondents of options they might later use in free-response fields; pilot testing can help alleviate this problem but does not overcome it entirely.

The risk of polluting the sample by using a public online instrument (e.g. Mitra et al., 2008; Solomon, 2001) was offset by incorporating secure registration mechanism and by asking respondents for the name of their home university.

Limitations of the online focus group method

The setting within which a focus group is held is naturally unnatural (contrived by the research and participants selected by sampling criteria); a less structured and formalised process runs the risk of decreased rigour; data may represent only the view of dominant participants; the role of moderator requires delicate balance between control and freedom; and analysis can be problematic (Litosseliti, 2003). Morgan (1997) claims that focus groups are limited to verbal behaviour but this is not necessarily the case. Body language and physical interactions will still be exhibited but more importantly a group dynamic is maintained during interaction between participants (albeit on a smaller scale than a natural setting). The benefits of obtaining data in which "consensus, disagreement, and power differences" (Litosseliti, 2003:16) are evident does provide for some degree of realism and outweighs criticisms concerning the setting. In an interview based approach these criticisms might be well founded. In summary one might therefore assert that while the setting is not entirely natural, and generalisations from findings may be limited, the results from focus group sessions can still be considered indicative of the sorts of participants involved (in this case 18-24 year olds).

The focus group approach makes explicit use of interaction as a source of data in its own right (Litosseliti, 2003). While there may be a risk

that the group dynamic contains outspoken participants who embellish their opinions, this does not diminish the validity of findings since it would still represent an element of the overall pattern of human behaviour. Discussions focused on sensitive or controversial issues might not, however, benefit from a focus group approach for this very same reason. Concerns surrounding consensus should still be considered however: participants who dominate discussion may create false consensus with more introverted participants failing to speak up in opposition. Stewart and Shamdasani (in Litosseliti, 2003:34) note that in mixed-gender groups men are more likely to interrupt while women are more concerned with increasing rapport and coherence in the group, and that those who are considered more attractive are also considered more knowledgeable.

Relationships between participants may also jeopardise consensus: "friends can affect group cohesion, engage in private conversations, inhibit other participants, and endorse each other's views" (Templeton in Litosseliti, 2003:37). This raises the issue about whether data obtained represent a group view, or the view of various individuals. That members act both as individuals and as members of the group may add an important dimension to the type of data obtained (Litosseliti, 2003:24) – but it is safer to assume certain precautions in avoiding the domination of group sessions by individuals and misleading or untruthful responses. These might involve establishing rules at the outset such as asking of participants that they refrain from speaking at the same time as one another, and by making the researcher's expectations of participants clear from the outset by stating that there is no need for agreement and no right or wrong answer.

Litosseliti (2003) also recommends the use of one-to-one interviews after a focus group in order to contextualise the data obtained during the session. While this may strengthen the validity of findings, by triangulating interview data with focus group data, it does suggest that the earlier focus group exercise carries redundancy.

The nature of the group dynamic and interaction within focus groups also requires the researcher to consider the need for balance between "giving control to the group and possibly hearing less about the topic of interest, or taking direct control over the group and possibly losing the free-flowing discussion that was the original intent of the group interview" (Morgan, 1997:11). Litosseliti (2003:46-47) argues for the need to shift the role of moderator from directive (controlling) to non-directive (permitting flexible discussion) during the group session itself. A semi-structured approach, of the sort used in this project, is therefore an effective means by which this balance can be achieved and recognises the need for both flexible discussion and focus on the objectives of the research. This topic guide not only ensures that discussion can be kept focused but also permits the researcher to identify emerging trends and themes during the investigation itself, and to adapt to a non-directive moderation role during sessions, which in turn recognises the grounded theory approach on which the research design is partly based. The use of a semi-structured approach also helps minimise the risk of researcher bias, by providing some scrutiny in order to avoid leading questions. Inappropriate probing of answers, however, is still a risk which needs to be overcome.

Within an online environment participants are required to type responses at the same time as others are posting responses and discussion is therefore likely to last longer (e.g. Montoya-Weiss, Massey, & Clapper, 1998) and may result in a large number of overall comments which are individually shorter than face-to-face (FTF) sessions: ambiguity may be difficult to address as a result (e.g. Chase & Alvarez, 2000; Schneider et al., 2002). Probes and follow-up phrases to counter the speed and non-linear nature of the conversation can offset this limitation (Chase & Alvarez, 2000). The need for an enhanced moderator role introduces the risk of researcher bias, as described above, which is difficult to offset during deployment. Pre-determined prompts to account for likely developments during discussion can alleviate the impact, as can the use of a thematic content analysis of data obtained from this method.

Analysis of qualitative data can be problematic: the complexity and quantity of dialogue from focus groups can take considerable time to transcribe and analyse, and for this reason they are not a 'quick fix' for testing hypotheses (Litosseliti, 2003). Bryman (2008) suggests that it is not necessary to transcribe the entire session but rather only those elements considered relevant to the purposes of the fieldwork and also raises the problem associated with inaudible segments: there is little that the researcher can do to overcome this pitfall beyond ensuring the recording equipment being used is of sufficient quality. The transcripts of focus group dialogue are also difficult to structure effectively. Denscombe (2003) volunteers that the line numbering and coding of dialogue is an effective means by which data can be located quickly within the transcript, and organised thematically. Notes next to lines of dialogue can also allow for body language or vocal emphasis to be described, avoiding stripping the data of these important elements. Punctuation is also a necessary inclusion in order to give form to the crude data which might be unintelligible to any not present at the session.

Limitations to the sample

The level of IT literacy and computer and Internet access required of participants might ordinarily be considered a limitation but in the scope of this project this was not considered significant. This research project engages with undergraduate students who have much higher levels of access than other socioeconomic groups (e.g. Anderson, 2001; Solomon, 2001; Jones, 2002; Lenhart, Madden & Hitlin, 2005; Cotten & Jelenewicz, 2006):

> "There are specific populations where Internet access is extremely high and coverage bias is likely to be less of a concern. College students are university faculty within the USA, Canada and Western Europe are examples of such populations"
> (Solomon, 2001:2).

Online instruments are therefore particularly appropriate for obtaining data from large groups of college students (e.g. Mitra et al., 2008; Sax, Gilmartin and Alyssa in Mitra et al., 2008).

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The risk of an unrepresentative sample is usually mitigated by the use of random sampling techniques (Behi & Nolan, 1996) however this was only practicable in one element of the multilevel mixed methods sampling strategy used in this study. In line with the pragmatic approach taken by this study, purposive sampling was used in order to maximise access to, and opportunity for data collection from, information-rich cases. Within this approach the emphasis was on producing transferability from findings rather than on forming generalisations. The sampling strategy therefore accounted for this and whilst the resulting sample may not be wholly representative this does not diminish the value of the data obtained from that sample.

Limitations of the sequential mixed methods data analysis technique

Responses were provided on questionnaire instruments, used to survey Millennials and library staff, to questions about opinions, beliefs and perceptions. It is a limitation of the data analysis technique that these were then scored because data were manipulated by transforming statements of attitude into metric measurements according to arbitrary rules (Blaikie, 2003). This is mitigated in part given that the instruments were deployed and analysed consistently and the resulting data were therefore comparable between respondents. The mixed methodology also accounted for this potential limitation by incorporating qualitative research methods with the intention of enabling sequential mixed methods data analysis to expand and explore earlier quantitative findings.

3.7 Project plan

A schedule of tasks and associated start and end dates, by which the research project was managed, is illustrated by Figure 3.7. It should also be noted that the researcher transitioned to part-time study after one year of full-time study and the project plan was necessarily adjusted. The timetable was also adjusted to account for delays with deployment of research instruments at participating universities, illness and other factors beyond the control of the researcher. Flexibility was important, though defining project tasks and associated periods of time helped to keep the research on schedule.
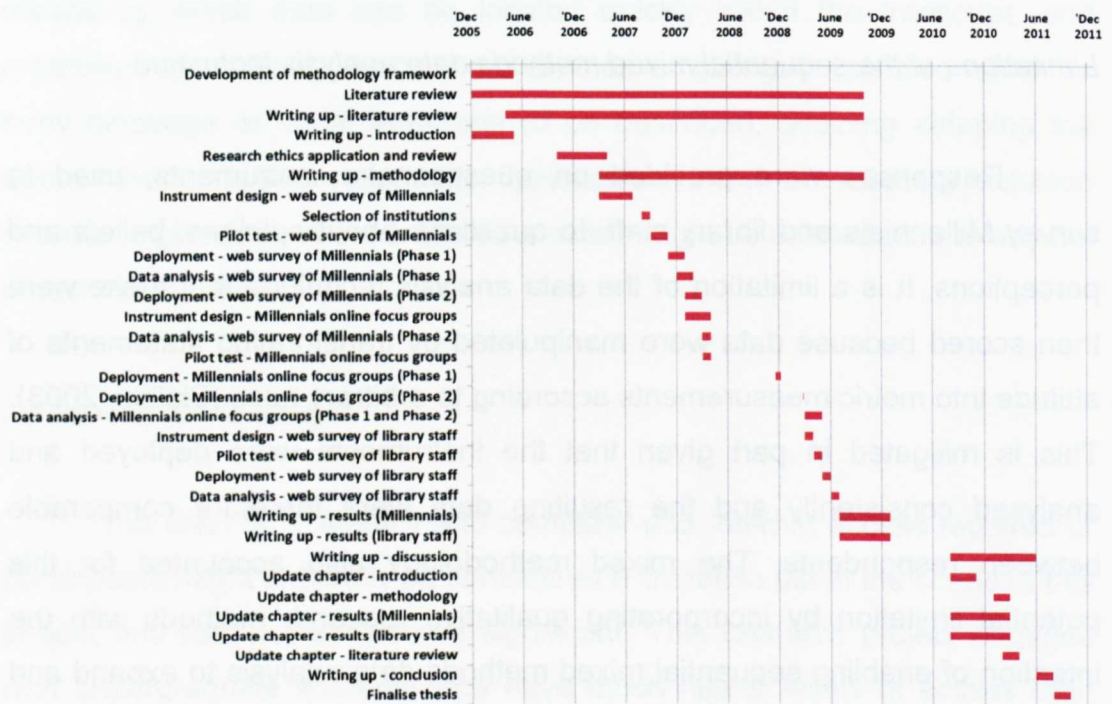
Figure 3.7. Project plan.

Conclusions

This chapter provided a full account of the methodological framework, including an explanation and justification of the methods selected and used, within which this research project was conducted. The phenomenological approach, with an interpretivist outlook which seeks to understand, rather than simply describe, findings which emerge from data acquired from human participants was described. A mixed methods approach, utilising a triangulated multi-layered design, providing the benefits of both quantitative and qualitative data at the same time as the limitations of each can be countered by the other was detailed.

The three methods of investigation chosen for the purposes of this research project in this context were subsequently outlined: a survey, by way of questionnaire, of undergraduate students, an online focus group instrument for discussion with undergraduate students, and a survey, by way of questionnaire, of library staff. Each method was selected with data requirements, the scope of the research project, and practical constraints in mind. Online instruments were considered particularly relevant for the purposes of this study.

Sampling strategies were devised for each method of investigation, starting with the selection and recruitment of institutions via library service heads. The recruitment of participants for completing questionnaires during the survey of Millennials, of participants in online focus groups with Millennials, and for completing questionnaires in a survey of library staff, were guided by sampling strategies which enable a more effective approach and which bolster the reliability and validity of the research.

Methods of data analysis were outlined, including univariate descriptive analysis and bivariate descriptive analysis for quantitative data and thematic content analysis for qualitative data. This allows for the analysis of each set of data in isolation from one another and as part of a cohesive

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whole in which comparisons can be drawn, including between each institution taking part in the project.

The limitations of the project methodology, including the role of researcher bias and the limitations of specific instrument designs, were also discussed. The impact of threats to the validity and reliability of research can be overcome, or limited, in part by designing safeguards into research instruments but in some cases this is not possible.

The following chapter highlights key findings from an analysis of data obtained during the first two strands of fieldwork – questionnaire responses from a survey of, and a series of focus groups with, undergraduate students at the four UK universities participating in the study, which aimed to assess and identify the characteristics, behaviours, and perceptions of undergraduate students aged 18-24.

4 Results and analysis of data obtained from Millennials

This chapter describes results obtained from two strands of fieldwork – a web-based survey of, and a series of focus groups with, 18-24 year old undergraduates at four UK universities which participated in this study – in order to assess and identify the characteristics of, and satisfaction with current library service provision, among members of the so-called 'Millennials Generation'.

The first section presents key findings and analysis of data obtained during the web-based survey of 18-24 year old undergraduates. Additional results are available in Appendix D. The second section presents a comparative thematic review of key findings from a series of online focus groups conducted with 18-24 year old undergraduates. Preliminary thematic content analysis of focus group discussions is available in Appendix F and coding of qualitative data is illustrated in Appendix G.

4.1 Web-based survey of Millennials

This section of the chapter outlines key findings from analysis of primarily quantitative data obtained from a web-based survey of undergraduate students at the four universities which participated in the study. The sample is described in the first instance, followed by an examination of information resource use and selection among respondents. Findings which highlight satisfaction levels with current library service provision is then presented using an approach influenced and inspired by the LibQUAL+ measurement tool (ARL, 2009).

4.1.1 Sample characteristics

There were 410 usable responses in total which satisfied the minimum desired quota of 200 responses; 304 were recorded at Institution A, 27 at Institution B, 54 at Institution C and 25 at Institution D. Sixty-two submissions from Institution A, 3 from Institution B, 4 from Institution C and 4 from Institution D were discarded because they did not contain enough data for valid analysis or were submitted by individuals outside of the sample selection criteria (individuals who were not within the 18-24 year old category and/or who were not current undergraduates at the four universities which participated in the study). Table 4.1 illustrates a breakdown of responses by age and institution. The high response rate from Institution A undoubtedly bears relation to the marketing and promotion techniques used at this institution in comparison to others. There were more responses from students in the lower age range (18-20) than in the higher (22-24) possibly reflecting lower numbers of mature undergraduate students. The highest response rate came from 19 and 20 year olds.

Table 4.1. Sample characteristics of Millennials by age and institution.

Institution	Responses by age (n)							Overall
	18	19	20	21	22	23	24	
A	63	80	81	54	17	7	2	304
B	6	6	3	5	4	2	1	27
C	3	12	18	10	2	4	5	54
D	3	14	4	1	3	0	0	25
Overall	75	112	106	70	26	13	8	410
(%)	(18.3%)	(27.3%)	(25.9%)	(17.1%)	(6.3%)	(3.2%)	(2.0%)	(100.0%)

4.1.2 Information resource use and selection

Respondents were asked to describe their use of information resources in the first section of the survey. This included an exercise in which respondents rated ten preselected specific sources of information by frequency of use, ease of use, factual reliability, and value. Electronic databases, e-journals and e-books are occasionally referred to collectively as "electronic resources" during analysis, following the conventions of current

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literature. Wikipedia, search engines, Google Scholar and the subject gateways are not included within this grouping because they are provided by third parties (i.e. non-university providers). Respondents were also asked about their access to computers, to the Internet, and about their use of the Internet in general.

Resources: frequency of use

Ten preselected resources were rated according to frequency of use using a five-point ordinal scale (1=Less than quarterly, 2=Quarterly, 3=Monthly, 4=Weekly, and 5=Daily). Data were analysed by median score in this instance as a result of the scale used. The frequency of resource use for each item is similar across all four institutions. There are no statistically significant differences in responses between institutions although e-journals and e-books appear to be used more frequently at Institution D than elsewhere. Search engines are the most frequently used (daily) resource among respondents at all four institutions. Virtual learning environments are also used frequently (daily) by respondents, along with printed materials, the library catalogue and Wikipedia (weekly). The least frequently used resources include Google Scholar (less than quarterly), subject gateways, and e-books with most respondents reporting that they do not use these resources at all.

Table 4.2. Resources: frequency of use.

Resource					Median Score
			Institution		Overall
	A	B	C	D	
Search Engines	5.00	5.00	5.00	5.00	5.00
Virtual Learning Environment	5.00	4.00	5.00	5.00	5.00
Printed Materials	4.00	5.00	4.00	4.00	4.00
Library Catalogue	4.00	4.00	4.00	4.00	4.00
Wikipedia	4.00	4.00	3.50	4.00	4.00
Electronic Databases	2.00	4.00	3.00	3.00	3.00
E-Journals	3.00	3.00	3.00	4.00	3.00
Google Scholar	1.00	1.00	1.50	1.00	1.00
Subject Gateways	0.00	1.00	0.00	1.00	0.50
E-Books	0.00	0.00	0.00	3.00	0.00

Resources: ease of use

Participants then rated each resource according to ease of use on a five-point interval scale (1=Difficult to 5=Easy). Again, there were no statistically significant differences in responses between institutions which suggests uniformity among respondents. Respondents at all four institutions find search engines to be the easiest resource to use. Ease of use seems to relate to frequency of use with electronic resources again scoring lowest.

Table 4.3. Resources: ease of use.

Resource	Institution				Mean Score
	A	B	C	D	Overall
Search Engines	3.77	3.85	3.78	3.68	3.77
Wikipedia	3.70	3.85	3.48	3.44	3.62
Printed Materials	3.57	3.44	3.63	3.68	3.58
Library Catalogue	3.14	3.52	3.44	3.52	3.40
Virtual Learning Environment	3.43	2.70	3.24	3.00	3.09
E-Journals	1.97	2.22	2.07	2.64	2.23
Electronic Databases	1.65	2.11	1.96	2.52	2.06
Google Scholar	1.81	1.81	1.83	1.76	1.80
E-Books	1.25	1.04	1.41	1.76	1.36
Subject Gateways	1.00	1.48	1.09	1.36	1.23

Resources: value

Respondents rated the same resources according to perceived value using another five-point interval scale (1=Not at all valuable to 5=Highly valuable). Value was defined as the extent to which a resource typically satisfied the need for scholarly information. Findings indicated that respondents at three of the four institutions find printed materials to be the most valuable resource. Findings from Institution D differ slightly with respondents reporting the library catalogue and search engines to be (equally) the most valuable. Two-thirds of the top three rated items in terms of value are university-provided. The lowest scoring resources, again, are electronic resources including Google Scholar, e-books, and subject gateways.

Table 4.5. Resources: perceived value.

Resource	Institution				Mean Score
	A	B	C	D	Overall
Printed Materials	3.68	3.63	3.80	3.52	3.66
Library Catalogue	3.28	3.67	3.59	3.60	3.54
Search Engines	3.53	3.52	3.48	3.60	3.53
Virtual Learning Environment	3.29	2.56	3.20	2.96	3.00
E-Journals	2.41	2.63	2.69	3.00	2.68
Wikipedia	2.80	2.67	2.52	2.68	2.67
Electronic Databases	1.92	2.56	2.39	3.12	2.50
Google Scholar	1.60	1.52	1.78	1.68	1.65
E-Books	1.35	1.30	1.43	2.00	1.52
Subject Gateways	1.09	1.37	1.15	1.60	1.30

Resources: factual reliability

Resources were also rated according to factual reliability using a five-point interval scale (1=Never factually reliable to 5=Always factually reliable). Despite low scores in frequency of use and ease of use, respondents at three of the four institutions flagged e-journals as the most factually reliable source of information. Findings from Institution A differed, with respondents regarding the virtual learning environment as the most factually reliable source of information. Although Wikipedia scored highly for frequency of use and ease of use it was regarded by respondents at all four institutions as nearly always unreliable. This suggests that ease of use is more influential in determining resource selection/use than factual reliability. All three of the top rated resources for factual reliability are university-provided. Respondents did not rate any resource as always factually reliable which possibly demonstrates scholarly caution among respondents.

Table 4.4. Resources: factual reliability.

Resource	Institution				Mean Score
	A	B	C	D	Overall
E-Journals	3.00	4.00	4.00	4.00	3.75
Library Catalogue	3.32	3.33	3.39	3.68	3.43
Printed Materials	3.39	3.41	3.52	3.28	3.40
Virtual Learning Environment	3.40	2.89	3.13	2.92	3.09
Search Engines	2.56	2.33	2.70	2.68	2.57
Electronic Databases	1.98	2.30	2.44	3.12	2.46
Wikipedia	2.12	2.00	1.98	1.72	1.95
E-Books	1.52	1.74	1.54	2.24	1.76
Google Scholar	1.62	1.59	1.61	1.60	1.61
Subject Gateways	1.20	1.52	1.22	1.52	1.36

Resources: overall findings

When resources are compared holistically it is evident that ease of use appears directly proportionate to frequency of use and perceived value among respondents. These factors appear to have a greater influence in resource selection and use than factual reliability although respondents did indicate an awareness of the limitations of resources such as Wikipedia. Printed materials and search engines appear the most highly regarded resources though printed materials and the library catalogue also scored highly suggesting that respondents do recognise credibility when selecting sources of information. Respondents also seemed wary, in general, of the factual reliability of information resources. Electronic resources consistently scored poorly although respondents from Institution D rated e-journals and electronic databases more highly than did respondents at the other three universities. Findings suggest that, on the whole, respondents prefer using physical information resources to online information resources.

Computer ownership and Internet access

Respondents were asked about their access to computers and to the Internet to ascertain if they are as 'wired' to the networked world as is suggested in the literature, and to account for the question of the Digital Divide among this peer group.

An overwhelming majority of respondents report owning a computer (96.6%) and levels of ownership are similar across all four universities. The lowest levels of computer ownership were reported at Institution D but the difference is not statistically significant. When asked whether Internet access was available from University accommodation respondents supplied high levels of 'no response' answers. It is possible that this question was misunderstood or poorly phrased and might have been made more explicit by referring directly to halls of residence. More respondents at Institution A confirmed that they have access to the Internet from University accommodation (51.0%) than did those at the other universities. A majority of respondents also confirm having Internet access within the family home with responses between 80% and 90% at all four universities suggesting uniformity.

Around eight in ten respondents access resources off-campus with more respondents at Institution C doing so than those from other participating universities. A similar number of respondents at Institutions B and D access resources off-campus, while Institution A recorded the lowest levels of off-campus resource use. While respondents were specifically asked which of the "university's electronic resources" they accessed off campus several respondents identified non-university resources such as search engines, subject gateways or Wikipedia. However, of the top three reported answers all are university-provided (virtual learning environment, e-journals, the library catalogue, and electronic databases). The library catalogue is the most popular item accessed off-campus, followed by the virtual learning environment, e-journals, and electronic databases. These findings suggest that respondents are indeed 'wired' to the networked world.

Students were asked about their Internet and scholarly activities to provide a comparison between the periods of time spent on each and to identify whether any correlation exists which demonstrates that Internet use may be an inherent component to the study technique of respondents.

Results, illustrated by Figure 4.1, with additional data presented in Appendix D, suggest that respondents spend a similar amount of time using the Internet for personal (i.e. leisure) activity as they do for scholarly activity, irrespective of institution. Respondents from Institution D spend more time using the Internet for non-scholarly purposes than those from the other three universities but a greater standard deviation score (18.97) was recorded here which reflects a wider spread of responses that may have influenced the overall hours per week mean score.

Respondents from Institution D also appear to spend greater amounts of time using the Internet for scholarly purposes than those from the other three universities. Highest observations were reported by respondents for non-scholarly Internet use; the highest being 105 hours per week recorded by a respondent from Institution A. Respondents from all four universities appear to use the Internet from between 25 and 36 hours per week on average. It also seems to be the case that Millennials integrate the Internet into their scholarly activities regardless of university and that they spend a substantial period of time each week doing so.
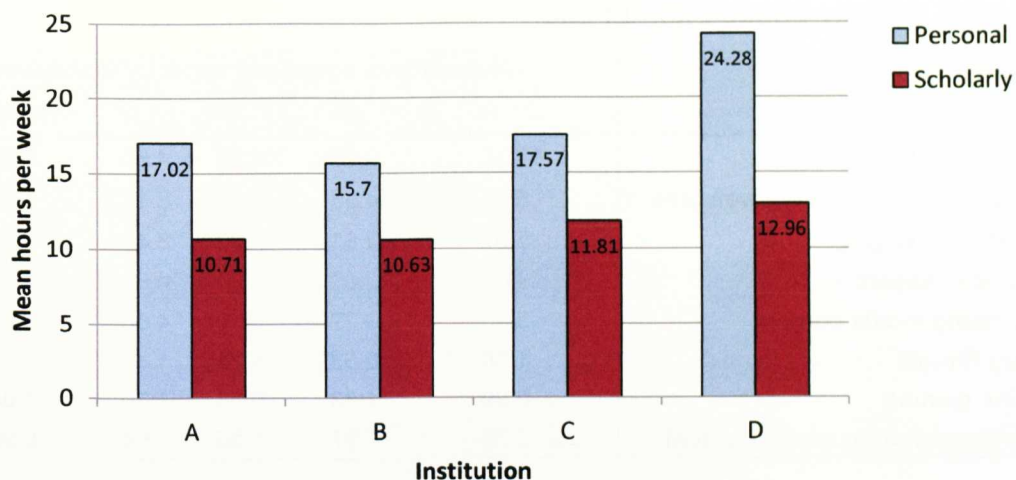
Figure 4.1. Mean hours per week spent using the Internet.

It is evident from Table 4.6 that academic study does occupy the time of respondents more than any other activity. However, the high score at Institution A has slightly distorted the overall mean score for this activity: it is clear from the results that respondents from Institutions B, C and D all spend more time on other activities such as using social networking sites (Institutions B and C) or instant messaging (Institution D). Social networking sites and instant messaging do appear to be extremely popular among respondents, occupying their time for around 13 hours each week. Respondents from Institution B, however, appear to spend substantially less time using instant messaging than those from other universities. Respondents from all four universities appear to spend a similar amount of time (3-4 hours per week) accessing media content on the Internet, and in providing or sharing media content. Results contrast with general assumptions within current literature, which suggest Millennials are as avid content providers as they are consumers, with data in this study indicating that respondents at the four participating universities rarely spend time uploading content to, or sharing content via, the Internet. It should be noted that while these results provide a general picture of Internet-based activity behaviours among respondents the data do not indicate how time consuming each activity may be.

Table 4.6. Activity-based Internet use.

Activity	Mean hours spent per week by institution				
	A	B	C	D	Overall
Academic study	17.30	3.27	4.29	4.60	7.36
Using social networking websites	6.96	4.98	9.03	8.12	7.27
Instant messaging	5.37	2.61	7.32	8.44	5.94
Personal research	4.03	3.65	5.88	4.68	4.56
Accessing media content	3.38	3.27	4.29	4.60	3.89
Using forums	1.10	0.63	1.71	1.44	1.22
Online gaming	0.99	1.63	0.34	1.20	1.04
Providing/sharing media content	0.78	0.37	1.96	0.64	0.94

Three-quarters of respondents do not communicate online with people they have not already met face-to-face. One quarter of respondents indicated that they do communicate with people in this way and highlighted the reasons for doing so. These include: a need to overcome distance, to meet people (particularly with whom they share interests), and for ease/convenience including the ability to communicate cheaply or for free by using the Internet as the medium. More respondents from Institution C communicate with people online they have not met face-to-face than those from the other participating universities but no more than one-third of respondents in the sample population indicated doing so. Since respondents indicated spending around 6 hours per week, on average, using instant messaging as a method of communication then it is probable that they do so to communicate with existing friends and acquaintances.

Of those respondents who acknowledge communicating with people online they have not already met face-to-face, those from Institution A identified the need to overcome distance as their primary motivation for doing so. Those from Institution B identified a range of reasons including the need to overcome distance, to meet people and build relationships, to engage with people sharing similar interests, and for ease and convenience. Respondents from Institution C also identified ease and convenience as a primary consideration. These results differ at Institution D where respondents reported that the main reason for online communication was for fun.

Responses illustrated by Figure 4.2 suggest that respondents tend to use the Internet, and tend to study, at similar times of the day. The majority of respondents generally spend time studying during the afternoon and evening which coincides with the periods when they are also using the Internet. The correlation (i.e. where respondents indicated that they both study *and* use the Internet at a particular time of the day) between study time and Internet use suggests that the Internet is a significant component of the study technique of respondents.
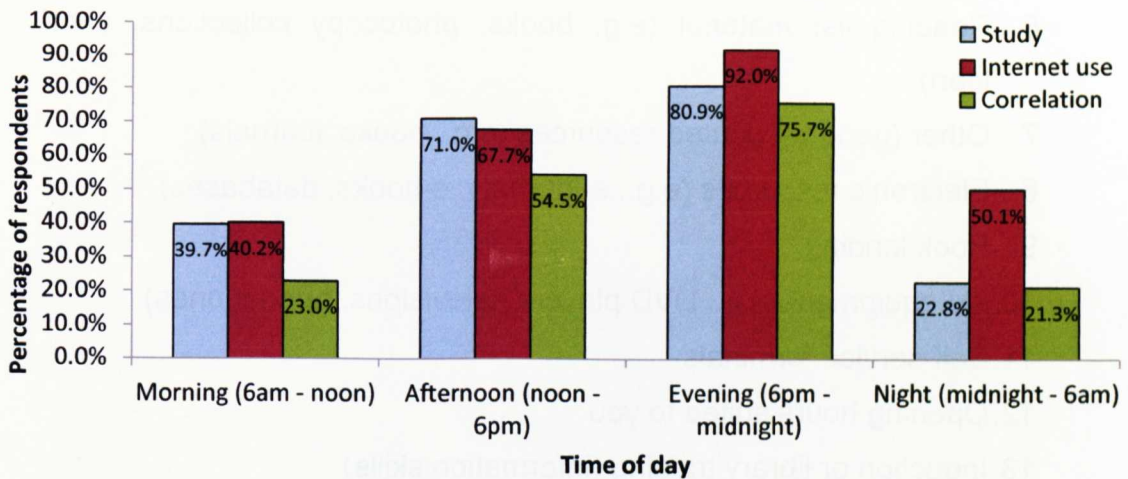

Figure 4.2. Correlation between periods of study and periods of Internet use.

4.1.5 Service performance

This section of the survey was designed to ascertain whether user needs are being met by the libraries participating in the research project, and was influenced by the LibQUAL+ standardised instrument. Twenty services were identified and assigned to one of three categories used by the LibQUAL+ approach: information control (covering physical services and delivery), affect of service (encompassing staff empathy and willingness to help), and the library as place (being concerned with the physical library environment).

The twenty services which students were asked to rate are listed below by category:

Information Control

1. Photocopying facilities
2. Printing facilities
3. Computing facilities
4. Library website
5. Library catalogue
6. Reading list material (e.g. books, photocopy collections, short loan)
7. Other (general) printed resources (e.g.. books, journals)
8. Electronic resources (e.g.. e-journals, e-books, databases)
9. Book lending
10. AV equipment (e.g.. DVD players, televisions, headphones)
11. Self-service terminals
12. Opening hours suited to you
13. Induction or library training (information skills)
14. Wi-Fi (wireless Internet connection) provision

Affect of Service

15. General staff knowledge/expertise
16. Staff IT knowledge/support
17. Staff willingness to help

Library as Place

18. Quiet space for individual activities
19. Community space for group learning and group study
20. Refreshment facilities

Students were asked to rate each service from 1 (Low) to 4 (High) in three areas: the minimum level of performance they would expect; the ideal, or desirable, level of performance they would like to see; and finally by how they currently perceive actual performance. Service adequacy can then be

assessed by subtracting the minimum expectation from perceived performance to ascertain if a service is meeting the lowest expectations. Service superiority can be gauged by subtracting desired performance levels from perceived performance levels with a positive result indicating that service performance exceeds even the highest expectations. Service performance can also be examined holistically using the three overarching categories (information control, affect of service, and the library as place).

Table 4.7, which presents findings in the same manner as LibQUAL+, illustrates the difference between minimum expectations among respondents at all four universities and perceived performance levels at those universities. Scores in red indicate that perceived performance falls short of minimum expectations, whilst scores in green indicate that services exceed minimum expectations. It is evident that only Institution A succeeds, overall, in achieving service adequacy by meeting or exceeding the minimum expectations of students though it does so by a marginal score of 0.06. Institution B has the greatest deficit between minimum expectations and perceived service performance.

Overall, three quarters of the institutions surveyed appear to be failing to meet the minimum expectations of Millennials. Only nine of the twenty services (45%) met the minimum expectations of respondents, who were most satisfied with the performance of self-service terminals (0.61), induction and library training (0.53) and with audio-visual equipment (0.38) and least satisfied with refreshment facilities (-0.52), reading list material provision (-0.44) and computing facilities (-0.43). Table 4.8 provides an holistic overview of service adequacy using the three LibQUAL+ categories. It is again evident that only Institution A achieves service adequacy though once more by a marginal score (0.04). Institution B records the lowest level of service adequacy of all four institutions despite scoring highest in affect of service. Institutions A and D share a similar level of service adequacy, as do Institutions B and C.

Table 4.9 illustrates service superiority which represents the difference between ideal/desired performance levels and perceived performance levels. Scores in red indicate that perceived performance falls short of ideal/desired performance, whilst those in green indicate that perceived performance exceeds even the highest expectations. It is evident that none of the universities appear to have overall service superiority although several individual services do outperform the expectations of respondents. Four of the twenty services exceed ideal/desired performance levels; these include induction and library training (0.41), self-service terminal provision (0.33), audio-visual equipment (0.19) and – with a negligible positive score – staff IT knowledge and support (0.02). According to Table 4.10 none of the four institutions achieve service superiority when services are examined holistically.

While students indicate their satisfaction with staff knowledge and expertise they do report a reluctance on the part of staff to provide support. Students seem less satisfied with the provision of quiet space than they are with the provision of group or community space.

Figure 4.3 provides a visual representation of the gap between minimum expectations, desired performance and perceived performance. The needs of respondents in terms of physical library space and environment do not appear to be met at any of the four participating universities.

Table 4.7. Service adequacy.

Service	Adequacy mean score (perceived score - minimum score)				
	A	B	Institution C	D	Overall
INFORMATION CONTROL					
1. Photocopying facilities	0.18	0.15	-0.08	0.12	0.10
2. Printing facilities	-0.20	-0.31	-0.52	-0.20	-0.31
3. Computing facilities	-0.18	-0.77	-0.34	-0.44	-0.43
4. Library website	0.17	0.19	-0.13	0.12	0.09
5. Library catalogue	-0.11	0.15	-0.18	-0.16	-0.08
6. Reading list material (e.g. books, photocopy collections, short loan)	-0.44	-0.58	-0.38	-0.36	-0.44
7. Other (general) printed resources (e.g.. books, journals)	-0.11	-0.31	-0.23	-0.20	-0.21
8. Electronic resources (e.g.. e-journals, e-books, databases)	0.01	-0.46	-0.19	-0.32	-0.24
9. Book lending	-0.20	-0.31	-0.30	-0.48	-0.32
10. AV equipment (e.g.. DVD players, televisions, headphones)	0.52	0.08	0.50	0.44	0.38
11. Self-service terminals	0.70	0.50	0.59	0.64	0.61
12. Opening hours suited to you	-0.10	-0.73	0.42	-0.20	-0.15
13. Induction or library training (information skills)	0.49	0.62	0.21	0.80	0.53
14. Wi-Fi (wireless Internet connection) provision	0.42	-1.23	0.26	0.76	0.05
AFFECT OF SERVICE					
15. General staff knowledge/expertise	0.03	0.15	0.05	0.20	0.11
16. Staff IT knowledge/support	0.10	0.38	0.18	0.32	0.25
17. Staff willingness to help	-0.23	-0.04	-0.05	-0.16	-0.12
LIBRARY AS PLACE					
18. Quiet space for individual activities	-0.28	-0.50	-0.26	-0.24	-0.32
19. Community space for group learning and group study	-0.15	0.12	-0.03	0.00	-0.02
20. Refreshment facilities	0.64	-1.00	-0.69	-1.04	-0.52
Overall Mean Score	**0.06**	**-0.19**	**-0.06**	**-0.02**	**-0.05**

Table 4.8. Service adequacy by category.

Category	Adequacy mean score (perceived score - minimum score)				
	A	B	Institution C	D	Overall
Information Control	0.08	-0.21	-0.03	0.04	**-0.03**
Affect of Service	-0.03	0.17	0.06	0.12	**0.08**
Library as Place	0.07	-0.46	-0.33	-0.43	**-0.29**
Overall	**0.04**	**-0.17**	**-0.10**	**-0.09**	**-0.08**

Table 4.9. Service superiority.

Service	Adequacy mean score (perceived score - minimum score)				
	A	B	Institution C	D	Overall
INFORMATION CONTROL					
1. Photocopying facilities	-0.06	0.00	-0.35	-0.20	-0.15
2. Printing facilities	-0.28	-0.50	-0.71	-0.44	-0.48
3. Computing facilities	-0.24	-0.92	-0.39	-0.64	-0.55
4. Library website	0.04	0.27	-0.10	-0.28	-0.02
5. Library catalogue	-0.17	0.08	-0.25	-0.28	-0.16
6. Reading list material (e.g. books, photocopy collections, short loan)	-0.53	-0.62	-0.59	-0.52	-0.56
7. Other (general) printed resources (e.g.. books, journals)	-0.28	-0.46	-0.37	-0.48	-0.40
8. Electronic resources (e.g.. e-journals, e-books, databases)	-0.23	-0.31	-0.37	-0.44	-0.34
9. Book lending	-0.31	-0.31	-0.41	-0.48	-0.38
10. AV equipment (e.g.. DVD players, televisions, headphones)	0.32	-0.04	0.18	0.32	0.19
11. Self-service terminals	0.39	0.38	0.33	0.20	0.33
12. Opening hours suited to you	-0.36	-1.00	0.20	-0.48	-0.41
13. Induction or library training (information skills)	0.31	0.62	0.22	0.52	0.41
14. Wi-Fi (wireless Internet connection) provision	0.21	-1.69	-0.02	0.36	-0.29
AFFECT OF SERVICE					
15. General staff knowledge/expertise	-0.14	0.12	-0.14	-0.24	-0.10
16. Staff IT knowledge/support	-0.09	0.23	-0.06	0.00	0.02
17. Staff willingness to help	-0.32	-0.08	-0.29	-0.28	-0.24
LIBRARY AS PLACE					
18. Quiet space for individual activities	-0.37	-0.38	-0.53	-0.44	-0.43
19. Community space for group learning and group study	-0.32	0.15	-0.27	-0.44	-0.22
20. Refreshment facilities	0.33	-0.81	-1.20	-1.40	-0.77
Overall Mean Score	**-0.11**	**-0.26**	**-0.26**	**-0.28**	**-0.23**

Table 4.10. Service superiority by category.

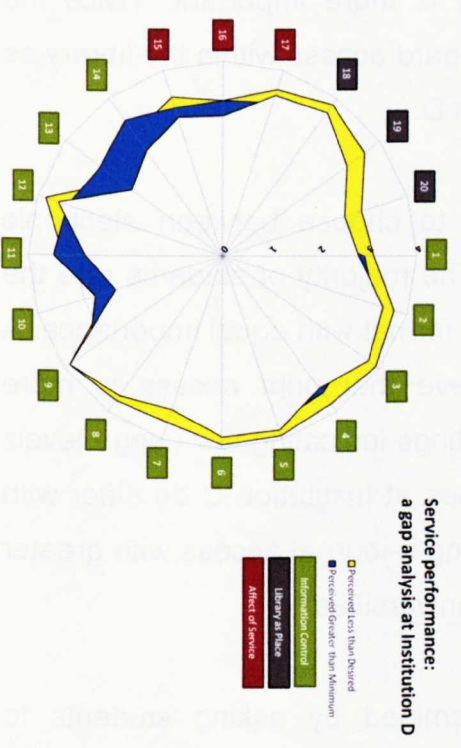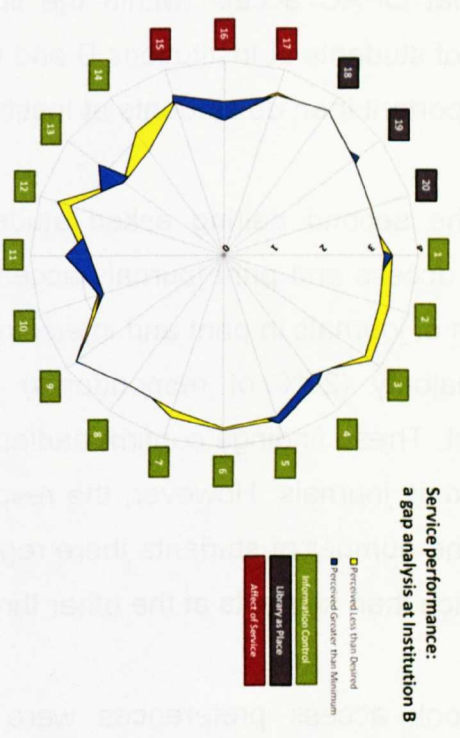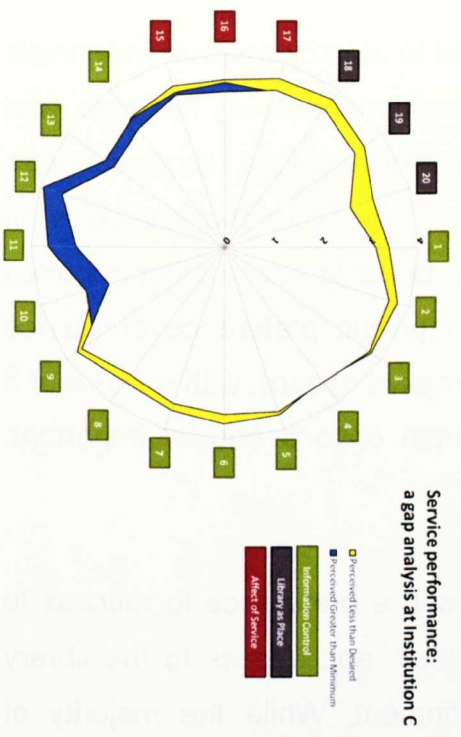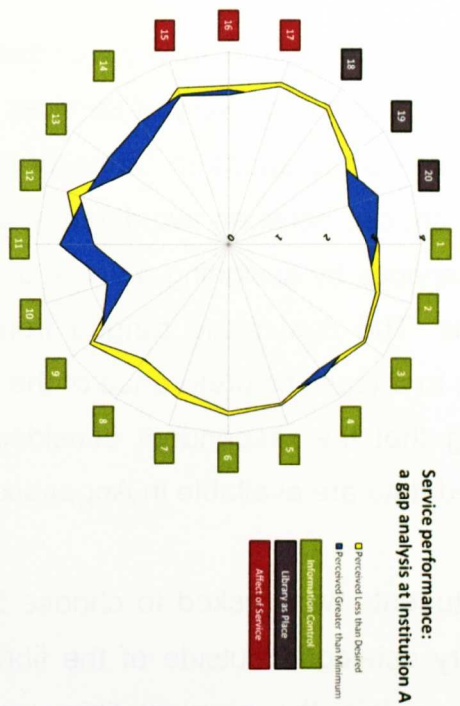| Category	Superiority mean score (perceived score - minimum score)				
	A	B	Institution C	D	Overall
Information Control	0.08	-0.21	-0.03	0.04	**-0.03**
Affect of Service	-0.03	0.17	0.06	0.12	**0.08**
Library as Place	0.07	-0.46	-0.33	-0.43	**-0.29**
Overall	**0.04**	**-0.17**	**-0.10**	**-0.09**	**-0.08**

Figure 4.3. Comparative service performance gap analysis.

4.1.6 Service priorities

This section of the survey was designed to identify whether Millennials prefer the electronic delivery of services to traditional delivery methods, and to determine preferences in terms of the library as place. Students were asked to choose between two different delivery modes, or characteristics, of certain services by assigning a score of importance to each option in paired selections. The dual scale ranged from 1 (specific preference of service option 1) to 5 (specific preference of the alternative option), with a score of 3 indicating that the respondent considered both options equally important. Tabulated data are available in Appendix D.

Students were asked to choose between a preference for access to the library catalogue outside of the library itself, and access to the library catalogue within the physical library environment. While the majority of students believe access to the library catalogue needs to be provided both beyond the library's walls and also within the library itself, 20% of students report that OPAC access within the library is more important. Twice the number of students at Institutions B and C regard access within the library as more important than do students at Institution D.

The second pairing asked students to choose between electronic journals access and print journals access. The majority of students rate the provision of journals in print and in electronic format with equal importance. A small majority (20% of respondents) believe that print access is more important. These findings confirm earlier findings indicating low usage levels of electronic journals. However, the responses at Institution C do differ with double the number of students there regarding e-journal access with greater importance than students at the other three universities.

Book access preferences were examined by asking students to choose between e-book access and print book access. The majority of students regard the provision of e-books as more important than the provision of printed material within the library (54.3%). This is an unusual

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result which conflicts with earlier responses regarding resource use in relation to e-books, which were consistently scored low by students across all four participating universities. Students at Institution B, in particular, regard e-book provision as important (66.7%). These findings suggest that while students do regard e-book provision as important, their needs are perhaps not being met by current e-book delivery methods.

Respondents also indicated their preference between designated noisy areas and designated quiet areas of the library. A majority of students (52.4%) believe designated noisy areas are more important to their needs than designated quiet areas. Over one third of students (36.6%), however, believe both types of zoning are equally important. These findings suggest that respondents make use of both quiet and noisy areas, perhaps a slight emphasis on noisy areas.

Respondents were asked to expand upon their zoning preferences by illustrating which study space configurations they prefer between group study space and individual study space. Most students believe the provision of group study space and individual study space are equally important (47.3%), although over one third (35.7%) believe group study space is more important.

Preferences for longer weekend opening hours or longer week day opening hours were also examined. Findings indicate that students believe longer opening weekend and week day opening hours are equally important (45.1%). Slightly more students (27.6%) believe longer weekend opening hours are more important than those who believe longer week day opening hours are more important (20.4%). These findings suggest that adequate opening hours during both periods are essential to respondents.

More respondents (39.2%) indicated a preference for online help and advice (with nearly one third of respondents from Institution C indicating their preference for this form of support) compared with just 12% of respondents

who indicated a preference for face-to-face help and advice. The majority of respondents (42%), however, perceive both forms of support to be equally important.

Preferences for the provision of library information via the library website or in printed library guides were uniform across the four participating institutions. Results indicate that respondents do look to printed library guides as a source of information about library services since a majority (59%) indicated a preference for printed library guides compared with just 7.1% indicating a preference for finding library information on a website. These findings suggest that the priority for meeting the support needs of Millennials is to ensure the provision of comprehensive printed guides, with the use of a library website as a complementary method.

Two methods for conducting instructional sessions were also compared: respondents were asked to indicate a preference for online delivery or face-to-face delivery. Respondents appear divided on the issue. The majority (39.3%) indicate that the provision of both forms of instruction is important and this is particularly the case at Institution B where over half of respondents (51.9%) hold this view.

A preference for self-service terminals or for staff issuing material was also examined. A majority of respondents (46.2%) prefer having staff available to issue material though a third of respondents (34.2%) believe both methods are important. Respondents from Institution B signalled a much higher preference for self-service terminals than those from the other three universities, while respondents at Institution C signalled a much higher preference for staff than those from the other participating universities. This result also provides a contrast to respondent perceptions on service performance in which self-service provision generally excels at all four institutions. Findings suggest that, while the provision of self-service terminals is important to respondents, staff presence is also valued.

Finally, respondents were asked to choose between the provision of assignments through a virtual learning environment and through traditional print media. A majority (42.4%) of respondents regarded each method to be as valuable as the other, though over a third (34.1%) indicated a preference for assignment delivery through a virtual learning environment. These findings confirm earlier responses regarding the performance of the virtual learning environment as a service, and high scores received for this resource in terms of frequency of use, ease of use, value and factual reliability.

4.1.8 Free-response feedback

A free response field for students to make any final remarks or comments led to a thematic analysis of responses which either clarified the responses of some students to earlier questions or raised new areas for exploration.

Students at Institution A identified opening hours as a weakness of library service provision, particularly during examination periods, and put forward a case for 24 hour opening. One participant indicated that "more study spca [sic] should be provided at exam times and the library should be opne [sic] longer, espcially [sic] at weekends" and another reaffirmed this view, stating that "libraries need to re-evaluate their opening hours, especially during periods when assements [sic] and exams are happening - they need to be 24hr to suit everyones dfferent [sic] study patterns and to fit in with students who have jobs". These concerns were also echoed by students at Institution B with one participant noting that the survey "should have some more question about opening times of the library, which I am not happy with".

Students at Institutions A, B and C commented on the difficulties of obtaining reading list material. One student indicated dissatisfaction with the wait time for obtaining reading list material - "spending 3or 4 days to wait - its

abit long", an opinion echoed by another participant who indicated that "I think more books / articles should be available to read on the internet. This is because when there are 3 books on the course "essential reading list" that we are told are neccessary [sic] to read to pass the exams and 200 people on the course...". Another participant reported problems with reading list citations and associated limitations with the electronic availability of items – "Law students have limited access to certain areas of Lexis Nexis and Westlaw, which proves complicated when trying to find material required under the reading list but isn't available". The disparity between borrowing limits and demand based on year of study was also raised with one participant stating that "...the amount of books we can take out at one time - these are the same for the 1st year when we use few books and in the third year when we have dissertations."

Students at Institution A highlighted concerns over a lack of study space, and observed that noise levels were high ("I believe all librarys [sic] should be quiet and silent unless otherwise stated - some people still dont understand this!"), whilst students at Institution C identified problems with computing equipment or online services being out of order – one respondent observed that "there should be regular checks on the staus of library equipment...in one instance where i was seqarching [sic] for a book, at least 6 catalouge computors [sic] could not open the holds page", whilst another remarked that "the only problem with using the library service is i keep logging into my information/ services online and it keeps logging me out, which is very very annoying...".

It should be noted that the number of students who opted to make a final free response comment was small at each institution, and no free responses were received from participants at Institution D.

4.2 Online focus groups with Millennials

This section of the chapter provides a thematic content analysis of data obtained during a series of focus groups, conducted using online discussion software, with 18-24 year old undergraduates attending one of the four universities participating in the study. The sample is described followed by findings which emerged from responses helping to identify generational characteristics among the 18-24 year old age group. This is then followed by a description of findings which emerged to build a picture of perceptions of library service provision among those who took part. Tabulated data from the content analysis exercise are provided in Appendix F.

4.2.1 Sample characteristics

The response rate to invitations for focus group participation was extremely low across all four universities and the turnout among those who did register to take part was also low. Overall 29 students expressed an interest in taking part of whom 13 actually participated. Of the 13 participants there were 4 from Institution A, 1 from Institution B, 3 from Institution C and 5 from Institution D. Institution A elected not to take part in a second phase of focus group recruitment based on the zero turnout from the first phase; students were instead given the option of completing a form designed in Microsoft Word which asked the same questions as those asked of students participating in the online discussion sessions: the 4 participants therefore contributed using this medium. The same form was also distributed at Institution B during the second phase of recruitment when focus groups failed to acquire any participants but there were no form submissions received. Over-recruitment was not possible owing to the nature of the instrument and the deployment methods and the impact of low turnout was therefore unavoidable.

4.2.2 Generational characteristics and identity

Participants were asked to describe the characteristics they believed people in their age group shared, and whether they identified with those characteristics or with being part of a 'generation'. Responses were placed into one or more of three categories: outlook (encompassing opinions, beliefs and views); behaviour (encompassing conduct and expression of outlook); and upbringing (covering external influences and factors).

Participants from Institution A typically discussed a range of characteristics across all three categories, with responses highlighting the fact that they considered their peer group to be comprised of ambitious, high achieving and driven individuals with greater levels of freedom and a more active lifestyle than previous generations might have enjoyed ("having fun, few money concerns, having freedom", as one participant explained, and "materialistic, knowledgeable, driven, demanding, needy, seeking, educated, wanting change" as another indicated). These views were mirrored by responses from participants at Institutions C and D; one participant from Institution D stated that "I think people of my generation are a lot more independent than older generations. There's less pressure for this generation to follow 'family tradition' and people are becoming more outgoing and socially aware. This generation is a lot less judgemental than older generations I tend to find".

Elaboration with these participants revealed a belief that technology underpins many of the behavioural traits which have been associated with this peer group. One participant explained that "I think people in this age group are a lot more materialistic than previous generations, particularly with regards technology" and that "...everyone wants the latest of everything now. New phones, laptops, cameras etc etc." Materialism and a demand for convenience are considered, by participants, to be the result of technology use – to the extent of dependence according to some participants – which has on the whole made life easier, empowered and informed individuals through greater levels of access to information ("one great thing about the

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internet is its very easy to get informed"), and promoted an egalitarian environment (even if this particular phenomenon is not regarded in a positive light).

Analysis also revealed that participants consider themselves to be at ease with technology, on the whole, asserting that the use of ICT has been an intrinsic and entrenched part of their lives. One student (Participant C at Institution D) remarked that "it is encoded in us...sort of when we become teenagers there is the boom of this thing called Internet - we take it along because that's really the age we learn...as my granny [was with] newspapers [because] they were the HIT at her teenage years". Participants seemed divided about whether email and social networking have decreased sociability or made Millennials *more* outgoing, as illustrated by responses from participants from Institutions C and D. While participants commented about their ease with using, and familiarity of, technology there were few comments about the competency or expertise with which this peer group uses technology. Participant A at Institution B asserted that Millennials are wary of trusting everything they read online ("I know that a lot of people are wary about trusting things they read on Wikipedia") and, through experience rather than instruction, have learned to sift through information for accuracy and relevancy (remarking that "its just something ive learned through using the internet").

Participant A at Institution B, and Participant A at Institution D both admitted frustration with some forms of instruction; their responses suggest a preference for individualised methods of instruction suited to individual learning styles and preferences – participant A at Institution B stated that "i often find lectures frustrating because i cant control the pace... if one person in the room doesnt understand something the lecturer is describing, the whole lecture is slowed down for that one person" whilst Participant A at Institution D explained that "a learning style such as lectures may work for one person may not work so well for people who prefer seminars. I

personally like to make a choice about how I learn, I know myself the best at the end of the day and don't like to be told how I HAVE to learn".

Participants at Institution C indicated that they are engaged with collaborative learning activity during their University education - "for my course we have to do alot of group work and as i said earlier i think...study rooms are great" – and one also expressed a desire for more social activities stating that "I think they should do more social events in there too like last semester with the sleepover and the birthday cake". This contrasted with some responses indicating that individual, quiet, study is important to this peer group; Participant A at Institution C stated that "I need absolute silence and solitude to work, if there are people walking up and down or someone sits at the same desk cluster as me I just get distracted", and Participant A at Institution B remarked that "all I need is a quiet environment and a computer... I definitely prefer individual work".

It is also important to note that, whilst identifying the characteristics of their peer group, many participants claimed not to personally associate with those characteristics.

Participants were then asked to think specifically about how and why they used the Internet and which websites they visit on a regular basis. Responses were placed into one or more of five categories: communication (covering contact with others); study (encompassing personal and academic study); current affairs (relating to news and topical issues); leisure pursuits (covering hobbies and other non-study activites); and presentation of self-image (how participants described their online identity).

It became evident from responses that participants at all four universities identified social networking – specifically Facebook - as a primary reason for using the Internet. In most discussions this was the first answer given to this question. Participant C at Institution D observed the prevalence of Facebook among this peer group, remarking that "I am like obliged to – I can't contact people otherwise"; another at Institution D

qualified the inclusion as "facebook (a must :))". Participants from all four universities highlighted the ease and convenience with which this social networking site enables communication and organisation between friends and family. Participants at Institution C also engaged in a spontaneous discussion about online privacy in relation to social networking with one student observing that "your whole life can be broadcast on a website like Facebook, without your permission, but somehow that's okay!" and that "...it's all or nothing with social networking"; another noted that it was a question of choice: "if your [sic] not on things like facebook u can keep ur privity [sic] - its ur chose [sic]".

Participants at all four universities also appeared to use the Internet to keep up to date with current affairs but whether traditional print media usage suffers as a result is unclear. Participant C at Institution C did acknowledge a preference for online news – "I use the net for the usual day-to-day stuff like...the news...". Internet use also encompasses the pursuit of leisure activities. YouTube appears to enjoy popularity among students participating in the study, with the exception of Participant A at Institution B (although this individual did still report using the Internet for videogame and film reviews). Online shopping also appears to be popular: participants felt empowered to find the best deals and avoid pressure from salespersons – one respondent noted that "it's cheaper to shop online, you can compare prices, and I also go through Quidco to get cashback" and another stated that "I find it easier to browse online and not have assistants nagging me or pressuring me".

The Internet also appeared to be an integral component of the study technique of participants. Google was hailed as a good starting point by participants from Institution D ("i use google as a start point and all the info it gives me") and one participant from Institution C suggested that Google had perhaps encouraged a laissez-faire attitude, remarking that "we keep things for the last moment we know we have Google". Wikipedia also received mention: Participant A at Institution B considered Wikipedia a useful resource commenting that "I find wikipedia particularly useful because of its heavy

reliance on sources...in that way it can be great as a source aggregator, a good starting point to research" and indicating that the primary reasons for making use of this website were "because of the large breadth of information it contains and for ease of use". University web pages – particularly the student portal – are also used by participants from all four institutions for the purposes of acquiring information relating to their academic studies – one participant noted that "I check our student portal for downloading slides,handouts etc for upcoming lectures". Content consumption, rather than creation or sharing, seems to be the primary focus of Internet activity - one participant from Institution C stated specifically that "I don't really share media".

Responses also suggest a uniform picture of behaviour among participants in terms of online identity. Only one participant (Participant A at Institution C) admitted to having presented a slightly distorted (more sociable and outgoing) identity to others on the Internet ("When I first started uni I suppose I wanted to appear more sociable and outgoing than I truly was (through Facebook) but I think a lot of people have that experience when everyone's making new friends"). This qualified statement suggests behaviour which is not necessarily peer group specific. The majority of participants claimed to present themselves accurately and honestly with some using photographs of themselves for avatars (a representation of oneself online) and their real names for usernames. Participant A from Institution B described the presentation of an established online identity albeit one using a pseudonym, indicating that "I would hope the opinions i express are the same but i might be more open online...i want people to be able to recognise me across different sites...if someone does notice my comments across different sites."

4.2.3 Perceptions of library service provision

Participants were asked why they used their university library/learning resource centre and services. Responses were placed into one of four categories: physical access and regulations (relating to buildings, resources and the Internet); resources (covering facilities and materials offered by the library service); environment (the physical library space); and support (aid and assistance available from the library and its staff).

Participants from all four universities typically identified library resources and the library environment as primary reasons for using their library or learning resource centre. Access, and support, are less predominant factors and participants from Institution A made no mention of access.

Participants made specific mention of several print resources: books, and journals, appeared to be popular because they relate to programmes of study, and using library resources is cheaper and more convenient than purchasing course materials ("Medical text books are soooo expensive!"). Participants at Institution D were quite explicit in referring to print resources as a reason for using the library service. In contrast, participants from Institution C observed that students rarely consult physical reading material with one student stating "How many people do you see reading books anymore?... I certainly don't see many people using books in my library. A lot of people have said if they can't find it in a book straight away they just go and Google for the info."

Photocopying and printing facilities also appeared to attract participants to the library although Participant A at Institution C remarked that "I rarely use the printers as it's a hassle putting money onto the card and it's cheaper to print at home" - Participant B at Institution C disputed this. Participants from Institution D also commented on the provision of DVDs (for entertainment purposes) with one student noting "DVDs...i do borrow alot of

those...films not related to my course, we do need a break :)" and another stating "i like the dvds we have". Responses given by participants from the other three universities taking part gave no indication that this service is offered elsewhere.

Participants from all four universities considered the library environment to be conducive to study citing the immediate (and therefore convenient) presence of useful and relevant resources – one student stated that "printers and computers [are] close to you" and another that "you have the resource just next to you, surrounded by books". The library 'atmosphere' was also a factor in promoting academic study: Participant D at Institution D commented that "everybody around you is studying" and Participant E at the same university remarked that the library environment "puts you in the mood". Both Participant A at Institution A and Participant A at Institution B considered the quiet working environment within their respective libraries to be an incentive for focusing attention on study. In contrast with this general feeling, and with responses to Question 1 which suggest that participants typically prefer to study alone, participants from Institutions B, C and D went on to identify the importance of group study facilities. This presents an interesting dichotomy in which participants seemed to prefer individual or quiet study but acknowledged the importance of group study space where course requirements demanded it.

Although participants do not seem to regard the library as a destination for obtaining academic support, on the whole, Participant C at Institution A and Participant D at Institution D did highlight two distinct reasons for using the library service in this category: skills workshops and acquiring research and reference support. Likewise, the issue of access – generally lacking comment among participants - seemed to be dominated by financial considerations and Internet or computer access where it was mentioned.

Participants were asked what they would change about their library/learning resource centre in a perfect world (i.e. in a setting where real-

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life constraints, such as financial consideration, would not apply) and – if they were in charge – what they would offer students like themselves. Responses were placed into one of four categories: physical access and regulations (relating to buildings, resources and the Internet); resources (covering facilities and materials offered by the library service); environment (the physical library space); and support (aid and assistance available from the library and its staff).

Responses to this question contrasted with responses to the previous question in which access did not appear to attract participants to the library. Participants indicated that access is indeed a key concern and an area in which they would seek improvement or change. Participants from Institutions A and B highlighted opening hours ("I would have longer opening hours", "it should be 24 hours"), participants from Institution C highlighted problems accessing physical resources in contrast to opinions previously voiced about reading levels, and participants from Institutions C and D put forward a case for increased self-service terminal provision. There was a lack of consensus on how access to materials could be improved. One participant at Institution A felt greater leniency in loan periods and fines would improve access to physical resources, while participants from Institution C felt that their own local regulations were too lenient and exacerbated the problem. Participants from Institution D felt that increasing the amount of electronic resources would ease problems with accessing material.

Participants from all four institutions suggested improvements to computing provision and the volume of physical course-related materials with some respondents indicating that they would introduce, or expand upon existing, fiction collections ("a larger selection of fiction books", "more books that aren't study orientated... after all it is a library so why not get harry potter or angels and demons") suggesting that a non-academic service may prove popular among this peer group.

Suggested changes or improvements within responses to this question also covered the library environment and generally focused on improved comfort. Participants suggested the provision of comfortable seating areas, introducing or improving existing refreshment facilities, adapting associated regulations, and improving heating control. Participants from Institution C identified problems with the book stock layout, suggesting it be distributed more evenly throughout each floor of the library.

Some responses suggested a more social role for the library but this contrasts with responses to the previous question, and a response by Participant D at Institution A to this question, which placed greater emphasis on silent study. This again suggests a dichotomy in which participants seem to prefer individual or quiet study but also share an interest in more social elements of the library service. Two students also identified staffing as an area for improvement.

Finally, students were asked whether they thought library/learning resource centre staff serve an important role. Responses were placed into one of five categories: procedural (covering assistance with using library resources and facilities); directional (covering assistance with locating materials and facilities); subject support (for assistance with academic study and research issues); technical support (for assistance with equipment, including computers); and affect of service (encompassing customer care, approachability, and a willingness to help).

Participants emphasised the importance of affect of service in their range of responses to this question. Answers highlighted the need for good customer care and a friendly and approachable demeanour. Participants from Institution C provided a number of examples where they felt the affect of service was poor (for example, one participant anecdotally reported that "I took a book to them to loan as I needed to some software too which they keep behind the desk. The guy just looked at me like I was stupid and said "Have you used our self service machine before?". I answered that I had but that I needed to loan some software too" whilst another stated that "i think

the library staff are good if you get the right people- a couple are just rude").
This seems to have influenced the regard in which they hold library staff:
participants here prefer self-service and value staff for backup purposes only
with only one participant, Participant C, expressing general satisfaction in
this area. Opinion seemed divided among participants from Institution D, and
more widely, on the question of whether information presented face-to-face
is more valuable or effective than that provided online. Participant A at
Institution B noted that online information is not always easy to find, nor
might it be the universally preferred method of access, whilst Participants C
and D provided similar responses which highlighted the usefulness of staff
for clarifying information or instructions. Participants at all four universities
also seemed to place importance on the presence of staff in terms of
reassurance whether for 'backup', for new users, or in general.

The provision of directional support by staff was also highlighted by
participants from Institutions A and D, with specific reference to finding
missing or difficult to locate materials and for the purposes of saving time.
One participant from Institution D reported that "it's sometimes difficult to
locate books particularly in the high demand and reference only sections"
and another commented that "they help me alot to find what i need and save
my time". Convenience, again, seemed to be an important theme emerging
from responses. Participants also indicated that procedural support was
important. Responses typically covered those queries or situations which
students could not, themselves, resolve: for example replenishing paper and
toner and accessing materials under staff custody including short loans,
items on hold, and certain material types such as DVDs. It would be a
reasonable observation that responses which highlighted procedural support
would be significantly reduced or omitted entirely were students able to
resolve these issues themselves; the importance of staff in this respect might
therefore be regarded as circumstantial.

The importance of staff with regard to the provision of subject support was mentioned only by participants from Institution D; no other group commented on this area. Two participants from Institution D observed that staff fulfilled a useful role by recommending reading and resources though one student admitted to never having taken advantage of this service ("I think faculty librarians that are linked to particular degree programmes are the best as they actually understand which books would be best to link with what you're trying to find and can offer further reading suggestions too"). Participants from Institutions C and D also felt that staff were important for providing technical support; Participant A at Institution D qualified this with an observation that while staff could be approached with IT troubleshooting queries "they don't seem to have training to answer those questions".

Conclusions

A range of traits and characteristics were identified from analysis of data obtained during a web-based survey of, and series of focus groups with, 18-24 year old undergraduates at the four universities which took part in the study. These characteristics help to establish a generational identity for the 18-24 year old peer group.

Preferences for, motivations dictating selection of, and perceptions of, sources of information and library services were also obtained. Students who took part appear to exhibit an awareness of the limitations of certain sources of information but consider ease and convenience to be overriding concerns. Participants considered technology to be important to their peer group but did not elaborate on whether ease or regularity of use equates to competency with ICT. Many participants denied sharing characteristics which they believe identify their peer group, suggesting an emphasis on individuality even if there may be certain shared, or general, characteristics.

The Internet appears to be an integral part of the study technique of this age group though library services still seem an important, and valued, resource: traditional services, such as access to course materials (printed books and journals) and photocopying, printing and computing facilities, appear to be the primary motivation for using a library service.

There seems to be a dichotomy in which participants indicated a preference for individual or quiet study whilst at the same time having highlighted a need for adequate group study facilities to accommodate course requirements.

Library services at three of the four universities failed to meet the minimum expectations of students who took part in the study: only Institution A succeeded in meeting minimum expectations. The three specific services which perform worst in terms of meeting minimum expectations (refreshment facilities, reading list materials, and computing facilities) are related to the issue of ease and convenience. Improving access to physical materials is a key concern for students who took part; a variety of methods were suggested to remedy problems which students identified. Library staff are also held in quite poor regard; several narratives were presented describing specific incidents of perceived poor customer service or an unwillingness to provide support suggesting that the affect of a library service is not only a concern for students who took part in the study but that the services examined in this study are failing to meet expectations.

Participants indicated a general preference for using self-service facilities though acknowledged the value of a physical staff presence as a measure of reassurance. Responses received from students taking part in the study suggest that this peer group regard library staff as a source of minor procedural or directional support only, and appear unaware of, or exhibit low interest in, the availability of subject support.

It is prudent, having presented a picture of 18-24 year old undergraduate resource use and selection, generational characteristics, and satisfaction levels with current library service provision, to next consider the role, responsibilities and competencies of information professionals. The following chapter presents findings from a third strand of fieldwork – a web-based survey of subject and liaison information professionals at the same four universities which took part in the study.

5 Results and analysis of data obtained from library staff

This chapter describes results obtained from a third strand of fieldwork – a web-based survey of subject and liaison information professionals at the four UK universities which participated in this study – in order to identify the roles and responsibilities, current levels of academic education, competencies, and interaction with undergraduates which staff currently demonstrate.

The first section of this chapter describes the sample by examining the length of time respondents have been employed in their current post, the extent of academic qualification attainment, and the subject areas which respondents support. The second section then describes the self-described competencies of the sample and sources of knowledge acquisition, as well as confidence with and perceived importance of a range of skills and knowledge. The third section presents findings which describe the teaching responsibilities and skills of respondents and also describes the nature of staff-student interaction. The fourth, and final, section then describes perceptions registered by respondents which concern the roles and responsibilities of information professionals.

Combinations of qualitative and quantitative data were obtained, and key findings are illustrated with tables and charts where appropriate. Additional results in the form of tables and charts are also available in Appendix I.

5.1   Sample characteristics

The overall sample, determined by identifying staff in relevant subject/liaison roles from library/university websites and through recommendations put forward by local institutional contacts, totalled 83 members of staff across all four universities. An automated invitation was sent, by email through the web-based survey software, to each member of staff following approval to do so during liaison with local university contacts. The response rate was high with a total of 53 members of staff electing to participate. The highest rate of response (82%) came from members of staff at Institution D. The lowest turnout (47%) came from members of staff at Institution B though this is still higher than expected.
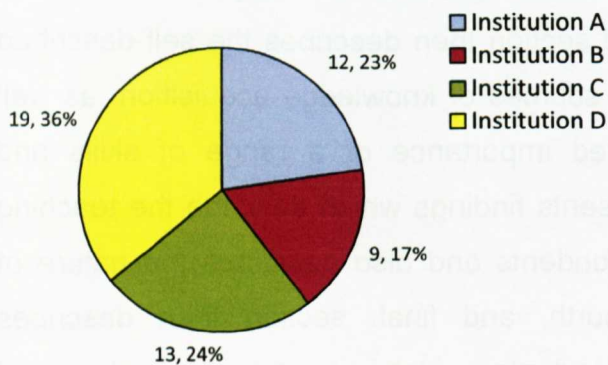
Figure 5.1. Total number of staff respondents.

Four broad subject areas – Social Sciences, Physical Sciences and Engineering, Health, Medical and Life Sciences, and Arts and Humanities – were listed in the survey and participants were asked to indicate which of these they support in their current role. Social Science disciplines, and Arts and Humanities disciplines, are the most commonly supported areas. A majority of respondents (71.70%) support only one subject area though eleven respondents (20.75%) support more than one. Three quarters of staff supporting Health, Medical and Life Sciences disciplines also support disciplines outside this subject area. Where staff support more than one subject area the data indicates staff who support Social Sciences also

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support Arts and Humanities (and visa versa), and those who support Health, Medical and Life Sciences also support Social Sciences. Social Science disciplines are most heavily supported by respondents and that staff with responsibility for other subject areas are more likely to support Social Science disciplines as an additional responsibility.

5.2 Qualifications and experience

A summary of findings from questions put to respondents about the length of employment in their current post and the qualifications they have obtained to support their responsibilities is provided. This section of the survey was designed to establish context to subsequent questions by identifying the extent to which staff have experiential knowledge of a subject/liaison role, the extent to which staff have prepared for – and demonstrate a commitment to professional development within – their career, and the extent to which staff are prepared for the increasing emphasis on teaching roles and responsibilities highlighted within current literature as highlighted within Chapter Two.

5.2.1 Length of time in current post

The average respondent has been in post for over five years. Respondents from Institution A have typically been in post longer than staff at the other participating universities (7.25 years). This information is useful for providing context to the changing role and responsibilities of staff because it illustrates that the average respondent has substantial experiential knowledge of delivering library services to 18-24 year old undergraduates (who form the so-called 'Millennials Generation'), and an associated understanding of the user needs of those whose learning they support. Data also suggests that the average respondent has not been in post long enough to witness *radical* change to their current role (e.g. as

might have been seen with the impact of automation) though the impact of more recent trends – such as the growing popularity of Web 2.0 technologies as instruments for learning and teaching – may still have been experienced by respondents.

5.2.2 Academic library/information qualifications

Respondents were asked whether they had obtained an academic library or information qualification and those who had were asked to elaborate with details including the year in which they obtained the award, the level of award, the subject matter, and the name of the awarding institution. Respondents were also asked if their course had been accredited by the relevant body. Two respondents held more than one academic library/information qualification: in both instances the higher level award was selected for analysis. Figure 5.2 shows a graphical representation of responses. Almost all respondents had obtained an academic library/information qualification (50 out of 53 respondents, or 94.34%) with Institutions A and D recording the highest numbers (100%) and Institution B recording the lowest numbers (7 out of 9 respondents, or 77.78%).
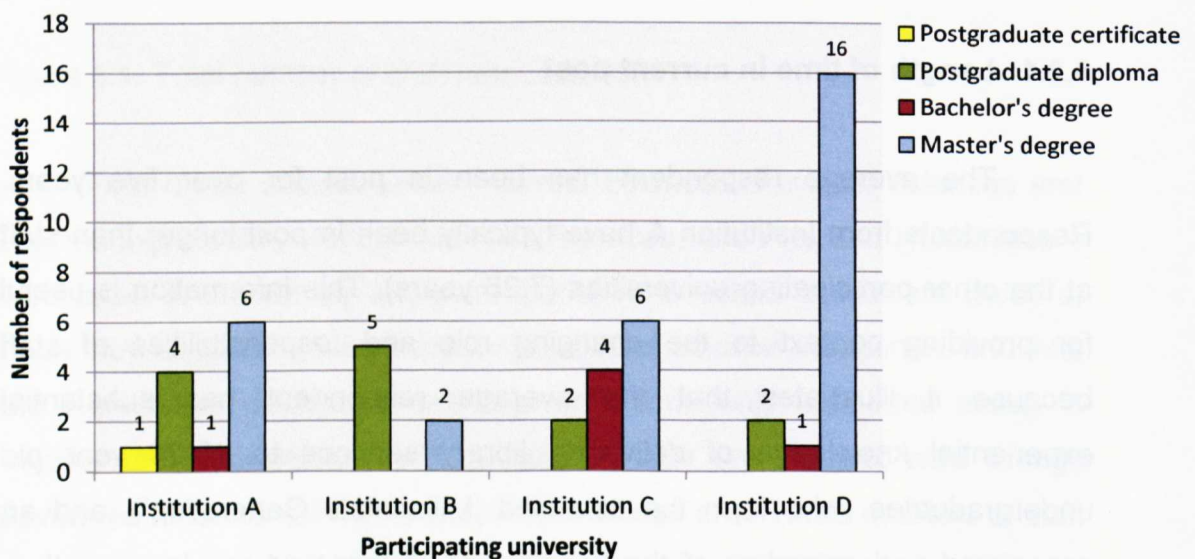
Figure 5.2. Range of academic library/information qualifications.

The most common level of award held by respondents is a Master's degree, with Postgraduate Diplomas the second most commonly held award. When contrasted with the age of qualifications held by respondents, illustrated in Figure 5.3, it is evident that the majority of staff at all four universities obtained their qualification more than ten years ago. This suggests a gap of around five years between the average respondent having obtained their academic library/information qualification and having secured employment in their current post. The age of academic library/information qualifications held by respondents is also useful for a comparison with self-described competency levels within preselected skills and knowledge which respondents were subsequently asked to provide; this is described in Section 3 of the report.
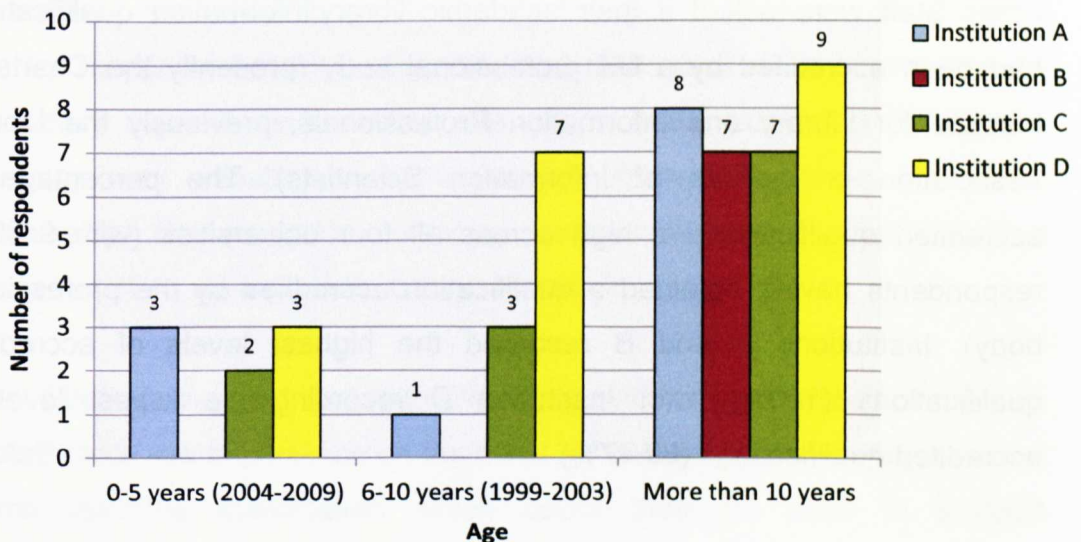
Figure 5.3. Age of academic library/information qualifications.

The majority of respondents obtained an academic library/information qualification by studying full-time (74.0%), with ten staff having studied part-time (20.0%), and only one member of staff (at Institution C) having obtained an award via distance learning (2.0%). Two respondents did not provide a response. This demonstrates that full-time study was typically the method by which information professionals currently employed at the four participating universities obtained their qualifications and given that they did so more than

ten years ago this may suggest that different modes of study were either not as widely available or as popular as may currently be the case.

Analysis of the subject distribution of academic library/information qualifications shows that a range of subjects within the field of Library and Information Studies were studied by respondents. Leeds Metropolitan University awarded the highest proportion of the qualifications held by respondents (11, of which 7 were at Master's level) and the University of Sheffield awarded the highest number of Master's degrees in library/information disciplines which are held by respondents (9). There was a wide range of institutions, including both pre-1992 and post-1992 universities, which awarded qualifications to respondents.

Staff were asked if their academic library/information qualifications had been accredited by a UK professional body (presently the Chartered Institute for Library and Information Professionals, previously the Library Association or Institute of Information Scientists). The percentage of accredited qualifications is high across all four universities (with 94% of respondents having obtained a qualification accredited by the professional body). Institutions A and B recorded the highest levels of accredited qualifications (100%), with Institution D recording the lowest level of accredited qualifications (89.47%).

While the course content of academic library/information qualifications obtained by respondents was not examined in any great detail by the survey, it may be argued that respondents have a commitment to core professional values and ethics by obtaining a recognised standard of education in their field since these are required elements of any accredited academic library/information programme.

5.2.3 Formal teaching qualifications

Staff were asked to indicate if they had obtained a formal teaching qualification in order to ascertain whether an increased demand upon information professionals to support teaching and learning activities has been supported by the acquisition of formally recognised teaching qualifications through which staff may therefore demonstrate an appreciation for, and competency in the application of, pedagogical knowledge.

Fourteen members of staff reported having obtained a formal teaching qualification (26.42%). Figure 5.4 indicates that high numbers of respondents from Institution C (9 out of 13 respondents, or 69.23%) have obtained formal teaching qualifications compared with low numbers at the other three universities. The PGCHE qualification is the most common type of award held by respondents which suggests that staff obtained a qualification to specifically support their current role (while those holding a PGCE, for example, may possibly have transferred from a teaching career to librarianship). One respondent obtained membership of the Higher Education Academy (HEA) via a portfolio-based approach.

Findings suggest that, with the exception of respondents at Institution C, staff place low importance on the need for pedagogical knowledge from a formal teaching qualification which could then be used to support responsibilities for teaching and learning. This is confirmed by responses from staff without a formal teaching qualification who indicated that they would not consider obtaining one in the future which includes all of those at Institution A. Only one member of staff at Institution B expressed an interest in doing so. Three of the four respondents at Institution C (75%) who do not hold a formal teaching qualification would be interested in obtaining one at some point in the future which, once again, illustrates the importance placed upon acquiring pedagogical knowledge by staff at this university. Under one third (29.41%) of respondents currently without a formal teaching qualification at Institution D would be interested in obtaining a formal

teaching qualification suggesting that staff at this particular university perceive some benefit in obtaining a formal education in teaching.
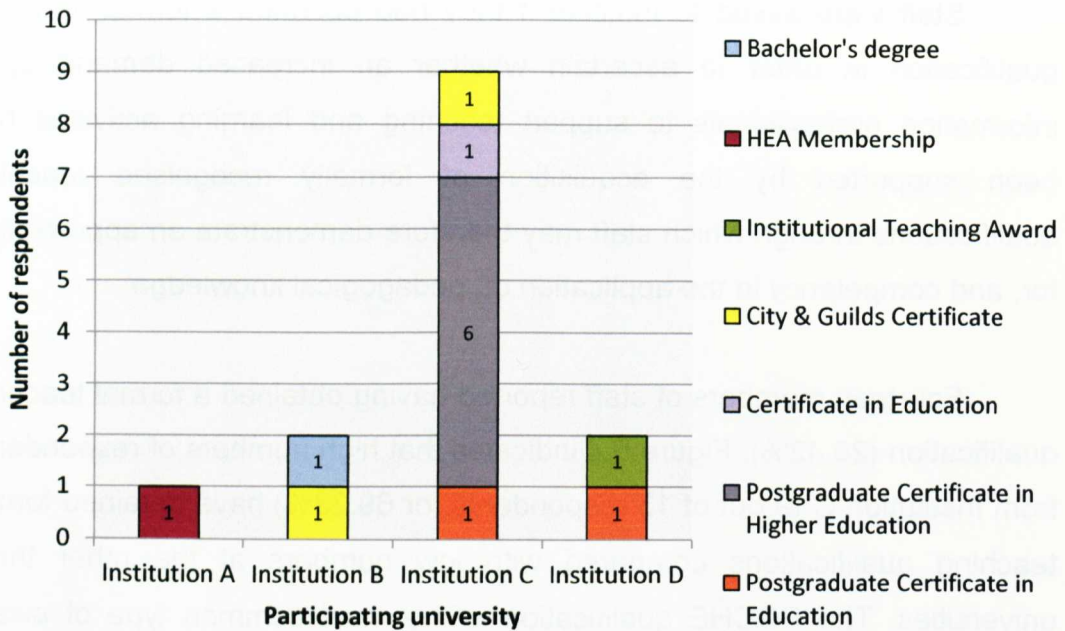

Figure 5.4. Range of formal teaching qualifications.

Half of the teaching qualifications obtained by respondents were acquired in the last ten years. Five respondents (35.71%) obtained a teaching qualification over ten years ago, including both respondents from Institution B, and two respondents gave no answer as to the age of their teaching qualification. Findings confirm views expressed within the literature, which establish an increasing teaching role for library staff and increased pursuit of formal education in teaching and pedagogy over the last ten years, and might suggest that respondents have reacted to an increasing emphasis on supporting teaching and learning by obtaining a formal education to support their new responsibilities. This is supported by data illuminating the most common mode of study among respondents who obtained a formal teaching qualification: 57.14% studied part-time and around one fifth (21.42%) studied full-time; this suggests that staff were already in employment at the time they sought a formal teaching qualification.

5.3 Skills and knowledge

Twenty items, corresponding to a skill or knowledge, were preselected and assigned to one of six knowledge areas against which respondents were asked to rate their ability and the source they considered to be primarily responsible for their current level of understanding. Each item was selected in the context of a literature review, conducted as part of the overall doctoral research project, and with relevance to supporting members of the so-called 'Millennials Generation'. The preselected skills and knowledge, by category, are illustrated in Table 5.1.

Certain category names do not reflect conventional usage. Information architecture[9] is, within the survey (and this chapter), defined as the overarching system, and service, within which the work of the respondent is practiced, guided and constrained. Organising information is also used unconventionally within the survey: this traditionally refers to cataloguing, classification, and indexing but here is widened to encompass the use of tools, resources and knowledge to create, organise and deliver information to consumers.

Staff rated their own ability on a scale of 1 to 5, representing a spectrum of competency, for each of the items. The scale was loosely based on TFPL's Skills Toolkit (TFPL, 2005) and a definition for each item on the scale is provided below:

1. Novice: no practical experience.
2. Apprentice: requires supervision in application and support for developing the skill further.
3. Practitioner: able to practice with minimal supervision.

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[9] Traditionally defined as "the structural design of shared information environments, the art and science of organising and labelling websites, intranets, online communities and software, to support usability and findability, and an emerging community of practice focused on bringing principles of design and architecture to the digital landscape" (Information Architecture Institute (IAI) in Kennedy & Abell, 2008:27).

4. Leader: able to practice without supervision and can help others apply the skill.

5. Expert: demonstrates outstanding performance; recognised as an authority within the organisation and could create an environment to develop the skill.

Table 5.1. Preselected skills and knowledge items rated by respondents.

Area	Skill or knowledge
Information environment	Awareness of developments in Higher Education Knowledge of learning preferences Sharing best practice with external organisations
Information architecture	Awareness of emerging technologies Knowledge of curricula in the areas you support Knowledge of relevant subject information resources
Organising information	Creating or editing web-pages Creating resources for a VLE Application of subject knowledge to answer queries
Assessing and evaluating services	Familiarity with quantitative research methods Familiarity with qualitative research methods Delivering customised solutions based on user needs
Personal and Interpersonal skills	Providing a customer-focused service Problem solving Communication Team work
Teaching provision	Teaching basic information skills Teaching advanced information skills Teaching effective Internet use Teaching specialist ICT skills

5.3.1 Competence by individual skill or knowledge

The central tendency was calculated using the median approach since the scale of competency against which respondents rated themselves is ordinal. A graphical illustration of the central tendency among respondents on an institution-by-institution basis, alongside the overall median score for useful comparison, is available in Appendix I.

Staff rate themselves highly across all of the preselected 20 items and the central tendency differs little between each institution on the whole suggesting parity in the competency of staff at all four universities. Respondents rate themselves most competent in teaching basic information

skills (at the level of 'leader') with the central tendency among respondents at Institution D being highest (at the level of 'expert'). Respondents rate themselves least competent in their familiarity with research methods (at the level of 'apprentice') with the central tendency among respondents at Institution A slightly higher than the overall median.

If mean scores were to be considered as a measure of central tendency, despite the ordinal scale used in this element of the survey, then results would indicate that staff rate themselves most competent in teaching basic information skills (4.30: 'leader'); teaching effective Internet use (4.02: 'leader'); and teaching advanced information skills (4.00: 'leader'), and least competent in familiarity with quantitative research methods (2.40: 'apprentice'); familiarity with qualitative research methods (2.68: 'apprentice'); and creating resources for a virtual learning environment (2.77: 'apprentice'). However, this approach for calculating the central tendency is not appropriate to the ordinal scale used and is provided here merely for comparison.

The median scores of a given institution differ from the overall median score in 8 of the 20 preselected items. The central tendency among respondents at Institution D is higher than other universities in terms of knowledge of supported subject curricula (at the level of 'leader'). Respondents at Institution A and B typically scored themselves lower than respondents at Institution C and D in terms of their competency with creating and editing web-pages. Respondents at Institution A typically scored themselves higher than did respondents at the other three participating universities in their ability to create resources for a virtual learning environment (between the level of 'practitioner' and 'leader' since the median falls between an even number). Respondents at Institution A also typically scored themselves higher than did respondents elsewhere in terms of familiarity with quantitative research methods, but – alongside respondents from Institution B – lower in terms of familiarity with qualitative research methods than the overall central tendency. The central tendency at

Institutions A and D is higher (and highest overall across all 20 items both for each university and for all universities taking part) than the overall central tendency in teaching basic information skills. Finally, respondents at Institutions A and C typically scored themselves lower than did respondents elsewhere in their competency with teaching specialist ICT skills.

No item recorded a central tendency score at the level of 'novice' indicating that respondents at all four universities believe they have a basic level of understanding in all 20 skills or knowledge areas. The overall central tendency across all 20 items also failed to reach the level of 'expert' though the median of responses from Institution D did reach this level.

5.3.2 Competence by area of skill or knowledge

The central tendency, also using a median approach, was determined for the six areas which encompass the 20 preselected skills and knowledge. Findings indicate general parity across all areas bar one – information architecture. This category included three skills which concern or influence the structures and systems within which information professionals work: awareness of emerging technologies; knowledge of curricula in the areas you support; and knowledge of relevant subject information resources. Respondents at Institutions A and D differ from the norm in this case by reporting typically higher levels of competency.

Findings also indicate that respondents typically report higher levels of competency in skills associated with teaching provision and in the area of personal and interpersonal skills. This suggests that respondents at all four universities feel able to handle the teaching responsibilities with which their roles are now increasingly associated and exhibit a high level of emotional intelligence (at the level of 'leader') which in turn suggests the affect of each library service is strong.

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From an holistic perspective the central tendency of responses from all participants did not fall below the level of 'practitioner' which again suggests that respondents consider themselves able enough in each area to carry out their role with minimal supervision.

5.3.3 Primary source of knowledge acquisition

Respondents were asked to indicate from where they felt their current level of understanding originated. Five options were provided on an ordinal scale with each number representing a unique source of knowledge:

1. Acquired on own initiative outside of work or current role;
2. On-the-job development (e.g. through experience, coaching/mentoring etc.);
3. Short course (e.g. one/two-day course, ECDL etc.);
4. Other extended educational programme (e.g. non-library diploma or degree, CertEd etc.);
5. Professional library/information programme (e.g. BA/MA Librarianship etc.).

The central tendency was determined using the mode of the scores in this instance, to identify the most frequent responses among respondents. The overall mode for each skill or knowledge indicated that respondents overwhelmingly consider most of their current understanding to come from on-the-job development with the exception of familiarity with quantitative research methods where the overall mode indicates that professional library/information programmes contributed most.

There are a few deviations from the overall mode. Respondents at Institutions B and D reported that short courses had contributed most to their knowledge of learning preferences among undergraduates whilst respondents at Institution C reported that other extended educational

programmes had contributed most. Respondents at Institutions A and D likely influenced the overall mode when reporting that professional library/information programmes had contributed most to their understanding of quantitative, and qualitative, research methods (whilst respondents from Institutions B and C felt that their own knowledge came primarily from on-the-job development). Respondents at Institution B appear to have had greater experience of short courses for obtaining knowledge and understanding, indicating that this source had contributed most for acquiring knowledge of learning preferences, awareness of emerging technologies, competency with creating or editing web-pages, and an ability to teach specialist ICT skills.

5.3.4 Comparative analysis of reported competence

Bivariate analysis techniques were used to compare: the age of academic library/information qualifications and competency levels reported by respondents; the age of academic library/information qualifications and the primary source of knowledge acquisition reported by respondents; and competency levels reported by respondents with, and those without, formal teaching qualifications in items within the area of teaching provision.

A graphical illustration of responses is available in Appendix I. Results indicate that those with an academic library/information qualification obtained in the last five years (2004-2009) scored themselves higher than those with an older, or no, qualification in only one item: awareness of emerging technologies. Respondents with an academic library/information qualification obtained between six and ten years ago (1999-2003) scored themselves higher than those with a newer, older, or no, qualification in two items: creating resources for a virtual learning environment, and delivering customised solutions based on user needs. Respondents with an academic library/information qualification obtained ten or more years (pre-1998) scored themselves higher than those with a newer, or no, qualification in one item: awareness of developments in Higher Education.

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Results also indicate that respondents with more recent qualifications tend to report lower levels of competence in more traditional skills/knowledge including: knowledge of curricula in supported subject areas; knowledge of relevant subject resources; and the application of subject knowledge to answer queries. This suggests that knowledge in these areas is obtained experientially or that newer academic library/information programmes place less emphasis on traditional subject related information provision and more on the acquisition of technological skills and awareness.

The central tendency of respondents without an academic library/information qualification is, in the main, on a par with staff who do hold qualifications, falling to lower levels only in research methods (both quantitative and qualitative) and, interestingly, across personal and interpersonal skills. This suggests that an academic library/information qualification may provide a useful grounding in these areas.

Overall it would seem from findings that the age of an academic library/information qualification, or the age of the respondent (since the two are likely, though not necessarily, related), may indeed influence the levels of competency reported by respondents. Those with newer qualifications have greater awareness of recent technological trends whilst those with older qualifications have a greater holistic understanding of the Higher Education sector and competence in core skills required by the subject and liaison role which are likely gained experientially.

Reported competency among respondents with formal teaching qualifications was compared with that reported by respondents without formal teaching qualifications in all four listed teaching skills. Findings superficially suggest that respondents without a formal teaching qualification believe themselves as competent as those without one and that obtaining a formal teaching qualification may have no net benefit for staff with teaching responsibilities. Indeed, the central tendency of the competency level reported by staff without a formal teaching qualification is higher in teaching

basic information skills (4.00) than reported by staff with a qualification (3.00). However, it is more likely to be the case that individuals with a formal teaching qualification are better placed to judge their own ability which, in turn, suggests that those without a formal teaching qualification may over-estimate their ability.

5.3.5 Confidence and importance

Respondents were asked to choose, and then rank, three of the 20 preselected items in which they felt the most confident in their own ability, and three in which they felt the least confident.

Items identified in first place for 'most confident' were then given a +3 score, those in second place a +2 score and those in third place a +1 score. In contrast; those items in first place for 'least confident' were then given a -3 score, those in second place a -2 score and those in third place a -1 score. In this way the overall confidence levels among respondents for each skill or knowledge could then be reasonably assessed: those items with a net positive score can therefore be regarded as items in which respondents felt more confident, whilst those items with a net negative score can be regarded as those items in which respondents felt least confident, in general. Findings are illustrated by figures in Appendix I.

Results indicate that respondents feel most confident with: teaching basic information skills (+52 points); teaching advanced information skills (+49 points); knowledge of relevant subject information resources (+43 points). Respondents feel least confident with: familiarity with quantitative research methods (-70 points); familiarity with qualitative research methods (-35 points); creating resources for a VLE and, equally, sharing best practice with external organisations (-27 points).

Respondents were also asked, in the same manner, to select and rank three items which they considered most important to their current role,

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and three items which they considered least important to their current role. Data were analysed in the same way, by assigning positive and negative scores based on rank order for each response. Results indicate that respondents feel knowledge of relevant subject information resources (+49 points); teaching advanced information skills (+43 points); and teaching basic information skills (+32 points) to be the most important skills for their current role. Respondents feel familiarity with quantitative research methods (-84 points); familiarity with qualitative research methods (-43 points); and sharing best practice with external organisations (-41 points) to be the least important skills for their current role.

These findings indicate correlation between confidence with, and perceived importance of, skills and knowledge among respondents. Results may be indicative of a link between experiential competence and confidence (with staff who regularly utilise a given skill becoming more confident in their ability to utilise that skill). It is important to observe that staff feel low levels of confidence in their familiarity with research methods (both quantitative and qualitative) and regard this knowledge as unimportant to their current role. While subject and liaison staff may, or may not, have responsibility for assessing and evaluating the effectiveness of the services which they provide, results do suggest that the capacity among respondents for tailoring services to the user needs of the so-called 'Millennials Generation' may be limited by lack of knowledge in this area. This is compounded, and confirmed, by data which shows a net negative result in each case (confidence and importance) for the item 'delivering customised solutions based on user needs'.

5.4 Teaching and student interaction

The penultimate section of the survey questioned respondents about their teaching roles in greater detail and about their relationship and interaction with undergraduates of the 'Millennials' peer group. Levels of formally acquired knowledge in areas of teaching and pedagogy were examined, the nature of user needs assessment at each university was explored, and communication between respondents and undergraduates (including methods, productivity and perceived ease of use) was investigated.

5.4.1 Teaching and pedagogy

The context of teaching undertaken by respondents was examined across seven preselected methods of delivering instruction or supporting learning. Figure 5.5, which illustrates findings, shows that five of the seven approaches appear to be utilised at similar levels: teaching small groups (0-20 students) in face-to-face sessions (90.57% of respondents); providing one-to-one instruction (86.79%); teaching large groups (21+ students) in face-to-face sessions (84.91%); producing training documents, guides and other materials (84.91%); and finally providing on-the-spot instruction at the point of need (81.13%). The numbers of respondents who support teaching and learning through local virtual learning environments, whether via modules embedded in the curricula or through stand-alone modules, appears to be quite low and conflicts with the perceived value of instruction via VLEs expressed within the literature. Nine respondents indicated 'other' methods for supporting teaching and learning were used and these included: "email" (4); "web-based" (3); "information skill clinic" (1); and "teaching academic staff" (1).

With the context of teaching activity established, the survey also asked respondents to indicate whether they had acquired pedagogical

knowledge through formal training across six preselected areas of teaching and pedagogy. Findings, illustrated by Figure 5.6, suggest general parity across participating institutions with a total of 42 respondents trained in general teaching techniques (79.25% of the sample); 41 in information literacy concepts (77.36%); 40 in teaching and learning theories (75.47%); 25 in web-based teaching techniques (47.17%); 18 in user needs assessment (33.96%); and 14 in outcomes evaluation (26.42%).

Responses from Institution D indicate that higher numbers of staff have undertaken formal training to acquire knowledge in these six areas than those at other participating universities though it should be noted that a greater proportion of respondents within the sample are from Institution D so results are likely affected by this. Knowledge of outcomes evaluation and user needs assessment are at the lowest of the six areas and suggest that information professionals may not necessarily be tailoring library instruction to the learning preferences of stakeholders or measuring the effectiveness of instruction programmes which are being provided. Levels of knowledge are generally high, however, and suggest that even where respondents may not have acquired a formal teaching qualification some formal training has still been undertaken to obtain understanding in teaching and pedagogy.

The average time spent preparing for, and delivering, teaching sessions to undergraduates each week is highest among respondents at Institution D (4.58 hours per week), and second highest at Institution C (3.91 hours per week). Respondents from Institution A spend the lowest amount of time (1.08 hours per week) preparing for, and delivering, teaching sessions among respondents from the four universities taking part whilst respondents from Institution B also spend less time (2.83 hours per week) than the overall mean time (3.28 hours) spent by respondents at all four universities. It may be the case that respondents from these universities simply have less teaching responsibility. Results, when examined holistically, indicate that respondents do not typically spend a great deal of time supporting teaching and learning activities for undergraduates which, compared with earlier

findings, may suggest that while staff are prepared and trained to undertake teaching activities their current roles do not particularly emphasis this responsibility.
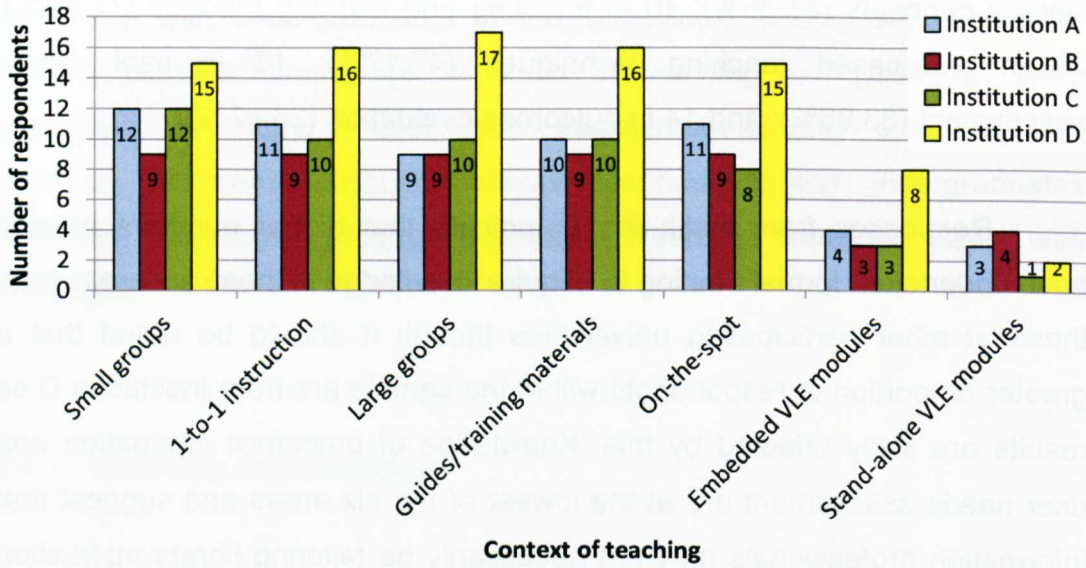

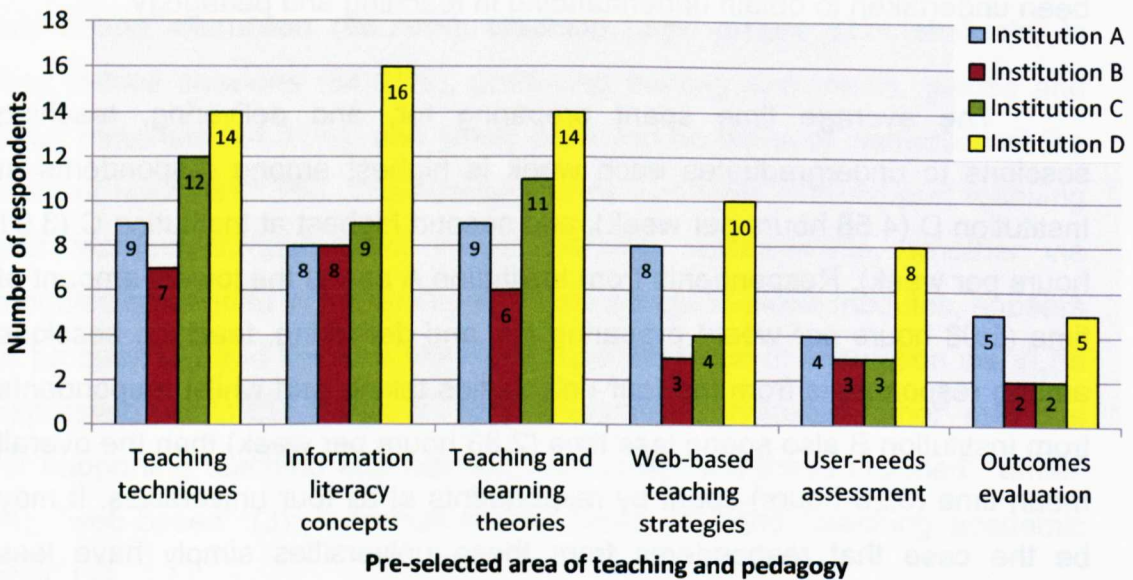Figure 5.5. Context of teaching undertaken by subject librarians.

Figure 5.6. Extent of formal knowledge of teaching and pedagogy.

5.4.2 Assessing user needs

Data were collected to explore the nature and frequency of user needs assessment exercises undertaken by respondents by way of two free-response fields. Answers were analysed thematically and are illustrated by Figure 5.7 and Table 5.2. Results indicate that respondents feel they 'continually' assess user needs. This suggests the question was open to interpretation with respondents feeling that user needs assessment takes place more often informally and outside of the typically formal process – for example surveying library users – which involves analysis of findings and determination of actions in response to those findings with the objective of shifting library services into line with the needs of users. However, findings do indicate that staff do utilise a variety of formal methods including surveys, focus groups, diagnostic testing and reference interviews. It may therefore be the case that respondents assess user needs on an individual, or localised, basis each time they have contact with library users though this exercise typically does not form part of an overall formal library strategy for meeting the needs of users.
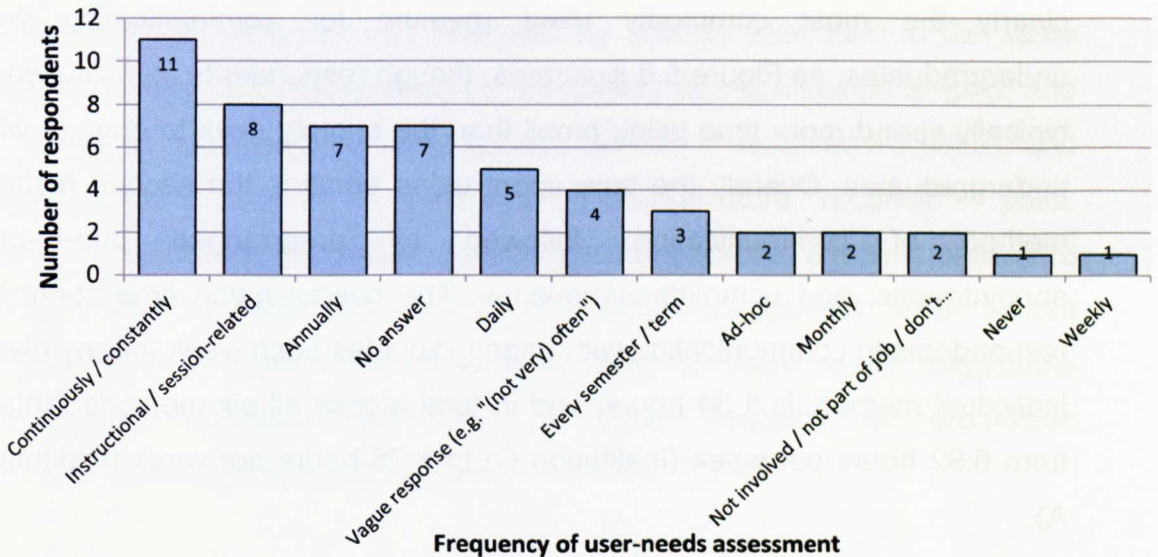
Figure 5.7. Thematic distribution of frequencies for conducting user needs assessments.

Table 5.2. Thematic distribution of methods of assessing user needs.

Method of user needs assessment	Institution			
	A	B	C	D
Surveys (web)			✓	✓
Surveys (paper)			✓	
Surveys (unspecified)	✓	✓	✓	✓
General written feedback (informal)		✓	✓	✓
General written feedback (formal)		✓	✓	✓
Instructional / session feedback	✓	✓	✓	✓
Face-to-face contact (informal)	✓	✓	✓	✓
Face-to-face contact (formal, e.g. committee)	✓	✓	✓	✓
Remote contact (telephone/email)	✓	✓		
Focus groups	✓	✓	✓	✓
Liaison with academic staff	✓	✓	✓	✓
Diagnostic testing and teaching/learning assessment			✓	✓
Reference interviews	✓	✓	✓	✓
Usage statistics		✓		✓
Peer observation				✓
Standardised measurement tools (e.g. LibQUAL+)				✓

5.4.3 Contact with undergraduates

Six methods of communicating with undergraduate students were selected and respondents were asked to indicate how many hours, on average, they spent each week utilising each method. The enquiry desk is clearly the most commonly used medium for communicating with undergraduates, as Figure 5.8 illustrates, though respondents at Institution D typically spend more time using email than the enquiry desk to engage with undergraduates. Overall, the time spent using email is the second highest method of communication, followed by prearranged one-to-one appointments, and committees/meetings. The overall mean time spent by respondents in communication with undergraduates each week for any given individual method, is 1.34 hours, and in total across all six methods ranges from 6.92 hours per week (Institution C) to 8.75 hours per week (Institution A).
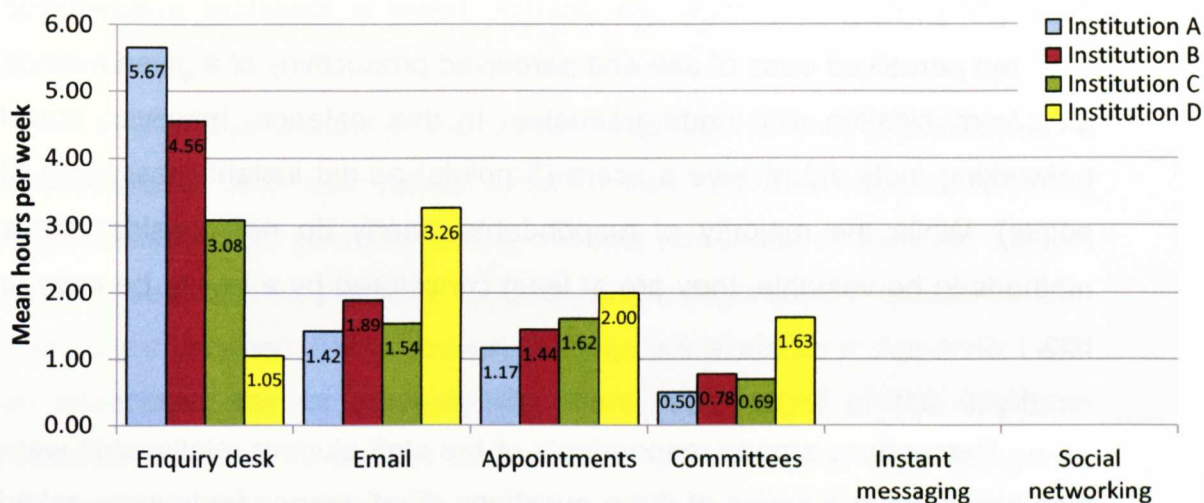
Figure 5.8. Mean time per week spent in contact with undergraduates.

It is also evident that respondents have not taken advantage of new approaches to communicating with students, such as instant messaging and social networking, though the survey did not provide any data on why this might be the case.

Respondents were asked to select, and rank, three of the six items which they felt to be the most productive methods for communicating with undergraduates. Results were analysed by scoring each item in the same manner as the previous exercise for assessing skill confidence among, and skill importance to, respondents. An item ranked 1st received +3 points, and item ranked 2nd received +2 points and an item ranked 3rd received +1 point. The top three methods were: prearranged one-to-one appointments (113 points); enquiry desk (90 points); and email (76 points). Both instant messaging and social networking tools failed to score at all, suggesting respondents perceive little value in these methods for productive communication with undergraduates.

In the same manner the perceived ease of use of each of the six methods of communication was assessed with respondents ranking three in order of ease of use and each receiving points on this basis. The top three methods were: prearranged one-to-one appointments (99 points); enquiry

desk (87 points); and email (81 points). There is therefore a correlation between perceived ease of use and perceived productivity of a given method for communicating with undergraduates. In this instance, however, social networking tools did receive a score (3 points) as did instant messaging (2 points). While the majority of respondents clearly do not consider these methods to be valuable, they are at least considered by a few to be easy to use.

Perceptions among respondents of the staff-student relationship were also assessed in a series of three questions. First, respondents were asked to rate how easy they find communication with undergraduates by using a Likert scale ranging from 1 (Difficult) to 4 (Easy). Responses were generally uniform, with a slightly higher mean score from respondents at Institution A (3.50) than those at Institution B (3.11), Institution C (3.08) or Institution D (3.16); all scores were within the higher end of the scale indicating respondents feel communicating with undergraduates is easy. Respondents were also asked to rate the productivity of their communication with undergraduates using a second Likert scale ranging from 1 (Unproductive) to 4 (Productive). Findings suggest that staff consider communication with undergraduates to be productive with responses at all four universities appearing to be uniform and within the higher end of the scale once again. Respondents from Institution A provided a higher mean score (3.17) compared with those from Institutions B (3.00), C (3.08) and D (3.05). Finally, staff were asked to rate their relationship with undergraduates using a Likert scale ranging from 1 (Poor) to 4 (Good). Again, responses were uniform and within the higher end of the scale, with a slightly higher mean response among respondents at Institution A (3.58) compared with those at Institution B (3.22), Institution C (3.31) and Institution D (3.16).

On the basis of these findings it can be inferred that the staff-student relationship is a positive one in which communication is both easy and productive and that this is true across all four participating universities.

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5.5 Changes to role and responsibilities

In the final section of the survey respondents were provided with a free response field and asked whether they felt their current role and responsibilities had changed during the last ten years. A thematic content analysis approach was used to tabulate, and categorise, the qualitative data which were obtained. Tabulated key findings are available in Appendix I with an associated key of category identifiers. Thirty-eight of the fifty-three respondents chose to answer this question (71.70%) and eight categories were identified during thematic analysis of responses ordered below by frequency of response:

1. Impact of ICT;
2. Teaching;
3. Information literacy;
4. Organisational change;
5. Customer service;
6. Workload;
7. Legal and social aspects;
8. No change.

The impact of ICT dominated answers to this question with 30 key responses identified during content analysis. Comments associated with this category were received from respondents at all four universities which suggests the issue affects respondents regardless of place of work. Responses varied from the more general – "Everything now computer based / supported by computer" – to more specific commentary, for example on the perceived increased requirement for staff to deliver materials to students using virtual learning environments which was highlighted alongside associated implications for staff skills and training. One respondent indicated that "teaching via VLE has become more important, so [I] spend more time using that and have additional skills for this...I have taken on web editing and IT support roles" and another noted that "in recent years changes to the

copyright licensing has affected my work – especially providing more scanned content embedded into the VLE. Better copyright knowledge, learnt on the job and in day courses, has had to be developed".

The impact of Web 2.0 applications such as Twitter and Facebook (cited most in responses), both as a means of communicating with students and delivering library services, was also identified by respondents. One individual, at Institution D, expressed concerns over the relevance of these technologies stating that "I feel a sense of obligation to try emerging technologies even though pedagogically I think some of them are inappropriate". This may explain a certain reticence, indicative of some responses, within the academic library setting to embrace these technologies as vehicles for approaching and interacting with undergraduates; one respondent noted, "we are on the verge of using these technologies, but have not explored too far yet", a state of play which is not unique, as evidenced by another respondent who remarked that "we are also exploring various web 2.0 technologies which may offer other methods of communicating with students".

A strong email culture continues to prevail, identified by respondents at Institutions A and B, with one participant commenting that a dependence upon electronic communication had resulted in reduced personal contact with students ("personal contact is more limited as more time is spent [with students] electronically"). Another respondent also observed a decline in face-to-face support - "I have found myself answering more user emails and dealing with fewer 1-2-1 enquiries". This was a view shared by a respondent at Institution B who observed an increasing need to support and engage with students remotely, noting that the means for doing so are diversifying all the time. Another explained that "we are now utilising a range of methods for communicating with students, e.g. web pages, electronic enquiry service, rather than just printed guides and structured training sessions."

A common theme in responses highlighting an increased demand for e-resources alongside, rather than in place of, traditional print resources is

further evidence to suggest that academic libraries are increasingly engaging with, and supporting, undergraduates using a range of methods. However, the impact of ICT is not perceived by all respondents as a positive development. One respondent stated that "I think we are fighting an (on-going) losing battle with the Internet, especially Google Scholar...".

In contrast with the reduced personal contact with students highlighted by responses describing the impact of ICT developments, thirteen respondents (11 from those at Institution D and 2 from those at Institution A) identified an increased demand upon staff to manage teaching responsibilities which often require a face-to-face medium. One respondent from Institution D noted that "I spend a great deal more time in formal teaching sessions with students, and those sessions have become much more interactive and discursive". Another extrapolated on the changing nature of teaching, noting a greater emphasis on task-oriented, simplified, and varied instruction which aims to keep students entertained to maintain interest and involvement ("T&L is now very task-oriented so students want quick and relevant solutions. To deliver them library training has had to be simplified - it helps them to complete their assignment but not necessarily to acquire an understanding of the process which they can adapt to other situations. Students expect teaching to be entertaining, so more varied techniques now in use").

A third respondent, also from Institution D, suggested that "introducing pedagogic teaching methods into practice [was the] biggest change and beginning to incorporate wider critical thinking and academic skills". Respondents at Institution D also felt that teaching responsibilities have moved increasingly closer towards general instruction as well as library/information skills and with this a blurring of the boundary between teaching staff and library staff is taking place. One respondent indicated they were not comfortable with this teaching paradigm shift - "I'm not sure I would feel confident delivering a generic skills session...without some more training". Respondents at Institution B and C made no mention of increased

(or decreased) teaching responsibilities which, given the high number of respondents with formal teaching qualifications at Institution C, is unusual and unexpected at least at this particular university.

Twelve key responses were identified during analysis which reflected views on information literacy, making this the third most cited issue within responses. Comments were received from respondents at all four institutions which suggest an increased need for instruction to address low levels of general, and information, literacy among undergraduates. One respondent noted that "the undergraduates that arrive from school have lower levels of general literacy as well as information literacy skills, which make things more challenging", a view indicative of the need for intervention within the Higher Education setting to remedy shortcomings earlier in the educational journey of students.

Another noted that the information-seeking behaviour of undergraduates – observed by another noting that "the understanding among undergraduates of the structure of information - especially periodical literature - has declined" – had given rise to "a greater awareness that our role is not about trying to tell students about every resource available in their subject, but enabling them to be more effective searchers". This view was reinforced by another respondent who indicated that "I see our role as helping them to become more expert and discriminating in their searching and to broaden the range of tools they use to include academic sources of information". Another participant commented on the associated necessity for increased "emphasis on educating students about plagiarism [and] referencing".

These trends have emerged, according to respondents at Institution D, from increased consumerism and a desire to obtain information quickly and primarily from electronic resources. As one participant concluded, "the need for information skills training (particularly in the area of evaluating sources) is stronger than ever amongst undergraduates and even postgraduate students, despite the perception that most things can be found

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on the internet". Instructional programmes have therefore developed and now incorporate wider critical thinking and academic skills as a result. The medium for delivering instruction has also adapted to learning preferences, as one participant indicated: "on the technology front there in an increased move towards more subtle and embedded forms of technology to deliver teaching e.g. using new software such as *Articulate* and voting software to deliver information skills teaching in a hopefully more engaging manner". Yet, despite these substantive changes, as one respondent noted "the basic purpose of supporting students' learning hasn't changed".

There were six key responses identified during analysis which reflect views on organisational change during the last ten years. Responses from Institution A indicate increased contact with members of academic departments with which they are affiliated and greater levels of collaboration with academic support units across the University – "I also have far more contact with members of the department I support (both staff and student) - which is good"; the same respondent noted that "I feel that I am one of the team", suggesting that the need for subject librarians to engage with academic colleagues had improved job satisfaction and lines of communication. Restructuring was also cited as a factor precipitating change by respondents at Institution C where the "ethos of the University" was also perceived to have changed as a result. One respondent at Institution D expressed a view which contrasted with those voiced by respondents at Institution C, indicating that staff had less autonomy following a role evaluation "with the result that the job is less satisfying than it was".

Four key responses were identified (three from those at Institution C and one from a respondent at Institution D) which highlighted the perception that a shift from an academic focus to a customer service focus had taken place. One respondent noted that this had consequences not all of which were positive, observing that "my role as a subject specialist on the desk is being constantly eroded in the name of offering good customer service i.e. quick answers and quick fixes so that students feel that have been dealt with

promptly". The same respondent indicated that the presence of subject staff on enquiry points to handle general duties (such as fines, and answering basic enquiries) had also diluted specialist subject support to the point where students were no longer aware that it is available, despite the evident need as witnessed in the increased number of one-to-one appointments being requested.

Four key responses were also identified (three from respondents at Institution D and one from a respondent at Institution B) which suggested some respondents feel the workload, and pressures of work, have increased during the last ten years. One respondent noted the difficulties of scheduling work activities, observing that "trying to incorporate [instructional sessions] into training [was frustrated by] academics not always allowing timetable space" – a view shared by another respondent who indicated that whilst "academics recognise that students need help from the Library and more of them invite us to provide it without us having to "sell" library training...they don't allow enough time for it".

Implications associated with the need to incorporate new information literacy instruction responsibilities into an existing workload were highlighted by one respondent who indicated that staff were now too busy to develop new skills or subject expertise as a result ("We've become much busier, with more pressure of work. Too busy to have time to develop new skills or subject expertise"). This is perhaps exacerbated by the need to keep up-to-date with both technology and pedagogical practice as expressed by a number of respondents – one participant noted that "the environment seems to change more rapidly, specially new technologies and I need to keep up to date".

One respondent, at Institution A, commented on an increased need for awareness of legal issues such as copyright and licensing which has emerged from the growing emphasis on e-resources and implications for VLE use ("Better copyright knowledge, learnt on the job and in day courses, has had to be developed").

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Answers falling within the final category ('No change') were typically provided by respondents who had been in post a year or less.

Conclusions

The majority of information professionals participating in the study have obtained a recognised standard of education in their field on that basis share a commitment to core professional values and ethics. While there is some division over the perceived value of formal teaching qualifications there are moves towards an appreciation of the benefits which can be conferred from a foundation in pedagogy. Levels of pedagogical knowledge are high across all four universities suggesting that even where respondents may not have acquired a formal teaching qualification some formal training has still been undertaken to obtain a basic level of understanding. It can be inferred that respondents feel equipped to handle increased teaching responsibilities but, despite this, most do not spend a great deal of time supporting teaching and learning activities for undergraduates nor does the virtual learning environment medium appear to be used extensively by information professionals for conducting teaching activities.

Respondents have a basic grounding at the level of 'apprentice' – and higher in many cases – across a wide variety of skills and knowledge appropriate to their role and responsibilities and consider themselves to be 'leaders' and 'experts' in teaching basic information skills. They feel least competent in their familiarity with research methods suggesting the effectiveness of service evaluation may not necessarily be a strength.

High levels of emotional intelligence were reported and respondents clearly feel able to handle the teaching responsibilities with which their roles are now increasingly associated. Competency with a skill or knowledge appears to be linked to confidence and perceived importance to current role. This relates to findings indicating that current competency stems primarily

from on-the-job development suggesting that, whilst academic library and information degrees may provide a theoretical framework, skills required by subject and liaison staff are typically acquired experientially rather than through extended taught educational programmes. The age of academic library/information qualifications does, however, appear to exhibit an effect on the extent to which respondents feel they are aware of emerging technologies and of developments in Higher Education though this may instead be the effect of participant age.

The staff-student relationship is perceived to be a positive one; participants indicate that communication with undergraduates is both productive and easy. The impact of emerging technologies on communication methods seems to be minimal; the enquiry desk, email, pre-arranged one-to-one appointments, and face-to-face committees/meetings are still the primary means by which respondents engage with undergraduates. Respondents do, however, indicate an awareness of the increasing popularity, or influence, of Web 2.0 applications such as Twitter and Facebook though some question the pedagogical relevance of using these methods to support the library-student link.

Increased teaching responsibilities, the impact of ICT, the need for information literacy instruction, and a shift from academic support to an increasingly customer-centric service paradigm are all cited as recent trends which have contributed to change in the role and responsibilities of staff. Respondents exhibit an ability to adapt to changing role requirements and responsibilities, to acquire competency in additional skills or new knowledge, and adhere to the view that, while the method or means may change, the basic principle of supporting students' learning remains the same.

Having identified the strengths, and weaknesses, across a set of competencies and skills among the sample population, and having explored the current responsibilities of, as well as opinions on changing roles among, information professionals, it is essential to compare findings with data obtained from the web-based survey and series of online focus groups with 18-24 year old undergraduates. This is in order to ascertain the extent to

which the skills of information professionals are matched to the service needs of undergraduates in order to then identify any potential gaps in service provision. The subsequent chapter, Chapter Six, merges data obtained from all three strands of fieldwork and considers this in comparison to findings from a review of the literature in Chapter Two, to produce a central discussion centred around key themes identified from the overall investigation.

6   Discussion

This chapter provides a thematically organised discussion of findings which have emerged from this study in order to identify the meaning and significance of results and to highlight potential implications for current understanding. A comparison is made with the literature to assess the extent to which findings in this study confirm, contradict or extend existing assumptions.

There are two main sections to this chapter. The first considers the impact and influence of technology and technology use on the Millennials Generation. Discussion concentrates on an examination of access to, and general trends in the use of, technology, and moves on to considering the extent to which information-seeking behaviour has been shaped by technology use. Finally, some thought is given to whether expectations among Millennials have been shaped by the use of technology. This section aims to address the first research question – who are Millennials and how can they be characterised? (RQ1) – and the first and second research objectives (to identify the defining characteristics of the Millennial Generation; and to explore the expectations for, and perceptions of, library service provision among members of the Millennials Generation).

The second section considers the impact and influence of technology in relation to library pedagogical practice. Discussion focuses on the changing nature of subject librarians' responsibilities and skills and subsequently how subject librarians, academic libraries, and indeed pedagogical practice, have engaged with the Millennials Generation. This section aims to address the second and third research questions which ask: how are Millennials served by libraries and librarians? (RQ2); and, is there an increased demand upon subject librarians to undertake new or increased responsibilities and what are the implications for competency requirements? (RQ3). In addition this section addresses the third and fourth research objectives: to consider the strengths and weaknesses of competencies and

skills currently held by subject/liaison librarians and how these relate to the expectations of service provision among Millennials; and to consider strategies by which potential gaps in service provision or professional competencies might be addressed.

Finally, the key findings are then drawn together in conclusion to this chapter with the presentation of a conceptual framework to assist with identifying the underlying themes.

6.1   Technology and the Millennials Generation

This section of the chapter considers access to technology, and general trends of technology use, among the Millennials Generation in order to assess the extent to which technology has pervaded the day-to-day scholarly and non-scholarly lives of Millennials, and – in consideration of resource selection and use, and Internet use – the influence of technology on information-seeking behaviours, and subsequent expectations placed on academic library service provision, exhibited by this age group.

6.1.1 Access and general trends

The study highlighted heavy use of technology among the 18-24 year old undergraduate student sample, and widespread access to a mass of information, the opportunity for choice and customisation, and an ability to take advantage of the ease and convenience offered by technology-driven solutions. A majority of students within the sample own a PC, benefit from access to the Internet from within both University accommodation and the family home, and typically spend between 25 and 36 hours each week using the Internet – almost equivalent to an average working week – doing so at the same times of the day as they pursue academic study. Findings within this study suggest that undergraduates are 'wired' to the networked world

and the Internet appears to be a significant component of their study technique. The levels of Internet access evidenced by this study are supportive of Cotten and Jelenewicz (2006) who assert that a 'digital divide' among college students is diminishing, given that universities are structured environments offering assured access. This contrasts with findings by CIBER (2008), in support of a survey undertaken by Synovate (2007), where it is suggested that a love for technology among young people is, in fact, myth, though Synovate (2007) nevertheless acknowledges that "surfing the net is now bigger than watching TV".

Communication habits among Millennials have also been influenced by technology. Lenhart et al. (2005) identified the rise of instant messaging (IM) in their study which established IM as the preferred method for contacting friends and family (above email). At this time the rise of social networking had not yet begun. Findings from the present study are therefore indicative of more recent trends and establish that social networking use has overtaken IM as the preferred medium for online communication. High levels of social networking website use are evident among the sample and Facebook was frequently cited as the primary reason for using the Internet. A general preference for collaborative academic study, which supports the communication habits of Millennials described in other research (Prensky, 2001; Manuel, 2002; Oblinger, 2003; Goldgehn, 2004; Pickard, 2004), was also highlighted by this study. The sample did, however, acknowledge that collaborative academic study is a circumstantial preference dependent upon the requirements of any given academic assignment. This perhaps clarifies an apparent conflict in the literature in which a general preference for collaborative and team-based activity is emphasised on the one hand (Howe & Strauss, 2000; Manuel, 2002; Goldgehn, 2004; Pickard, 2004) and individual study on the other (Gardner & Eng, 2005). Participants failed to reach consensus on whether online communication habits have made their peer group more, or less, sociable or outgoing though the ease and convenience with which social networking sites have enabled channels of communication to be established and maintained was highlighted.

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A disparity between the findings of this study and those of other studies is evident when considering the issue of content sharing among members of the so-called Millennials Generation. Lenhart and Madden (2005) and Lipincott (2006) assert that Millennials are as active in producing content with other users (for example, over the Internet) as they are in content consumption. Whilst Lenhart and Madden (2005) defined activities which could be construed as 'content sharing' (creating a blog; creating or working on a personal webpage; creating or working on a webpage for school, a friend, or an organisation; sharing original content such as artwork, photos, stories, or videos online; or remixing content found online into a new creation), the present study collated activities by asking participants how many hours per week, on average, they spent "providing/sharing media content" with YouTube and Daily Motion cited as example distributors for that content. The focus of responses may well be on video blogging or the general upload of video content as a result, but nevertheless the sample did indicate that content consumption is still the dominant activity, with few individuals appearing to spend time developing, and sharing, media content for distribution via the Internet.

Overall, findings from this study substantiate the general conclusions reached within existing studies which emphasise the fundamental, intrinsic, and pervasive access to – and use of – technology among the Millennials Generation.

6.1.2 Information-seeking behaviour

The student sample acknowledged that they were ambitious, driven individuals who have enjoyed greater levels of freedom emerging from an egalitarian environment, partly precipitated by the growth and influence of technology use, compared with previous generations. This confirms similar views within the literature (Howe & Strauss, 2000; Wolburg & Pokrywczynski, 2001; Mitchell, 2003; Gardner & Eng, 2005), though at the same time

presents an interesting dichotomy with the assertion made by Howe and Strauss (2000:171), which establishes that Millennials have experienced a substantial decline in the amount of unstructured free time they have to enjoy, from 52 to 33 hours per week, as a result of a more structured, regimented, and indoor lifestyle imposed upon them by others – typically family and school. This study also identified characteristics and traits which might have been influenced by technology use, including a materialistic mindset focused on convenience which, again, mirrors numerous views within the literature (Armstrong et al., 2001; Nowicki, 2003; Valentine in Holliday & Li, 2004).

A consumerist outlook, provoked by the ubiquitous nature of web-based information, was also reported by the student sample and supports existing views on this issue within the literature (Holliday & Li, 2004; CIBER, 2008). This is coupled with an evident demand for mass customisation which Manuel (2002) had previously identified some years ago. Whilst it is difficult to establish any precise link between the characteristics identified by the student sample, and the influence of technology in having caused those characteristics to emerge, some students within the sample did relate the two. For example, one participant commented that "I think people in this age group are a lot more materialistic than previous generations, particularly with regards [to] technology" and another noted that "...everyone wants the latest of everything now. New phones, laptops, cameras etc etc." Though there may be some degree of confirmation provided by this study to literature on the matter, it is nevertheless important to note that the findings of this study are insufficient to truly establish the existence of any relationship between technology use and generational outlook or personality traits.

The scope of this study precluded any direct assessment of information-seeking behaviour among the student sample. This would form the basis of valuable future research, which might verify or clarify the findings of this study. The study did, however, explore the use of specified resources – and of the Internet – in relation to scholarly activity was examined. Findings identified that the ease of use of a particular resource had an overwhelming

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impact on the perceived value and frequency of use of that resource, and therefore the motivations for resource selection. The findings of this study indicated that the student sample was aware of the limitations of resources, both in terms of credibility and reliability, yet reported high levels of use as a result of the convenience and ease of use which these resources offer. Search engines (used daily) and *Wikipedia* (used weekly) were scored highly by the student sample on both counts, for example. This confirms the findings of Campbell (2006) and perhaps describes the difficulty faced by today's undergraduate student when conducting effective research in the digital age as propounded by Head and Eisenberg (2009) for example.

Whilst results do not explicitly relate to the assertion that 18-24 year olds exhibit satisficing and surface scanning information-seeking behaviour, this behaviour is described as a by-product of a general preference for ease and convenience stemming from technology use and on this front the study might therefore support concerns expressed on this issue within the literature by Holliday and Li (2004), Barrett (2005), Heinström (2005), Prabha et al. (2007) and CIBER (2008). Students who participated in the study did, however, exhibit a wariness in terms of trusting information obtained online. Both *Wikipedia* and search engines were scored around the median mark for factual reliability, suggesting the student sample was aware of the limitations of both resources in this area. The student sample also suggested that experience – rather than instruction – had taught them to sift through information for accuracy and relevancy which contrasts with assertions made by Pickard (2004) and CIBER (2008) stating that high level of technology use among members of this peer group does not necessarily translate into a high level of competency. This self-described competence confirms findings from some studies (e.g. Krajewski & Piroli, 2002; Holliday & Li, 2004;) but conflicts with other research suggesting Millennials typically exhibit low levels of judgement on the accuracy, relevance and authority of information and an inability to determine when the search process has truly concluded (Barrett, 2005; Heinström, 2005; Prabha et al., 2007; CIBER, 2008).

Patterns of information-seeking behaviour may be linked to perceptions that Millennials exhibit different learning preferences to previous peer groups (McGlynn, 2005; Nicholas et al., 2008; Regan, 2008), preferences clarified by other research as a general inclination towards independent, student-centred and non-linear experiential learning (Oyston, 2003; Connaway, 2008). Whilst this study did not focus specifically upon learning preferences, or the impact of technology in shaping learning preferences, the student sample did acknowledge that they felt at ease with technology and considered technology to be an intrinsic and entrenched part of their lives. A preference for individualised methods of instruction, tailored to individual learning styles and preferences, coupled with a sense of frustration with instructional methods designed to cater for the masses, were also observed in responses from students taking part in the study (one student remarked that "i often find lectures frustrating because i cant control the pace...if one person in the room doesnt understand something the lecturer is describing, the whole lecture is slowed down for that one person" whilst another asserted that "a learning style such as lectures may work for one person may not work so well for people who prefer seminars. I personally like to make a choice about how I learn, I know myself the best at the end of the day and don't like to be told how I HAVE to learn").

The findings of this study are somewhat *indicative* of assertions made within the literature but cannot be regarded as substantive enough to *confirm* those assertions. Lecture-based teaching methods, for example, are no longer regarded within the literature as an effective model for supporting the learning of today's generation of undergraduates (Kirkpatrick et al. in Bundy, 2004); a focus on visual, auditory and kinaesthetic learning, which make use of concept maps, charts, diagrams, lectures, debates, discussions, simulations, field trips and research projects, is instead the preferred paradigm (McGuire, 2005). The extent of the differences between generations of undergraduates is disputed (Manual, 2002; Mill, 2008); however, it is possible that Millennials are more comfortable making use of technology in a scholarly context because it forms a substantial element of their personal lives outside of the scholarly environment (e.g. Regan, 2008).

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Overall, findings from this study support the argument that instructional programmes provided by library services need to be focused on research and information skills (e.g. Hutchings, 2008; Reisz, 2008; Hepworth, 2000), but contrast to prevailing views by indicating that 18-24 year olds are perhaps more aware of the limitations of resources than is generally perceived to be the case. This study cannot support the view that Millennials have poor judgement on the accuracy, relevance or authority of information, but instead it seems that ease of use overrides all other concerns, including factual reliability, in the selection and use of resources, even when individuals suggest they are fully aware of such limitations.

6.1.3 Heightening expectations

The materialistic, ambitious, consumer-driven outlook which Millennials have been described to exhibit has in part been attributed not only to social upbringing but also technology use (e.g. Howe & Strauss, 2000; Gardner & Eng, 2005; McGlynn, 2005; Brabazon, 2007) and purports to influence the expectations of this peer group when it comes to service provision. This study found that high expectations were evident in respect of academic library service provision, on the whole, with only one of the four universities in the sample having met the minimum expectations of those 18-24 year olds from that institution who participated. Two of the three services with which students reported greatest levels of satisfaction were technology-driven (self-service terminal provision and the provision of audio-visual equipment) and all three – library inductions and instruction being the third – relate to the issue of empowering students.

These findings partly substantiate the assertion made by Brabazon (2007), for example, that the focus of curricula is on methods or mechanisms for delivery, with a view to satisfying the 'customer', rather than on imparting real skills necessary for self-sufficient learning. The study also found that

service priorities pointed to a demand for convenience with equal weight placed upon both electronic/virtual delivery methods and physical delivery methods. For example, the provision of print journals was perceived to be as important as the provision of e-journals, and both weekend and weekday opening hours, coupled with access to the library catalogue both on-site and off-site, were considered to be of equal importance. This study therefore contributes to the view that Millennials expect a 'one-stop' approach to the provision of resources, information, IT facilities and support mechanisms, described by Ward (2003) and more recently George (2007), complete with packaged answers (Holliday & Li, 2004), and search features and functionality in electronic resources which mirror Google and other commercial search engines (Holliday & Li, 2004; Prabha et al., 2007). Findings also confirm the view expressed by CIBER (2008) which suggests that this peer group is accustomed to accessing resources and information without any barriers.

There is, however, some disparity between the findings of this study and other recent research on the issue of computing provision: the student sample exhibited a sense of dissatisfaction with the provision of computing facilities, reporting high expectations of their library services, in contradiction to research undertaken by JISC (2008) which established that pre-university anxiety among students about the likelihood of IT facilities meeting their expectations was subsequently relieved at the point when students arrived. The scope of this study precluded any focused exploration about satisfaction with computing provision and cannot therefore say, with any certainty, whether computing provision is simply below expectation at the four participating universities or whether students are exhibiting a higher *level* of expectation since 2007 against which computing provision within academic libraries has failed to measure up.

Satisfaction levels also appeared low in respect of the provision of quiet space for individual activities, with lower scores observed than for the provision of community space for group learning; this could suggest one of two things: either the emphasis placed upon collaborative learning

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preferences among Millennials within the literature (Howe & Strauss, 2000; Manuel, 2002; Goldgehn, 2004; Pickard, 2004) is overstated, or that the library services participating in this study have positioned themselves to deliver effective collaborative study space at the expense of individual study space. The student sample did indicate a preference for noisy study areas above quiet study areas, however, which confirms existing views within the literature that this peer group has a tendency towards collaborative group activity – something which arguably may stem from the use of social networking sites and other interactive online activities.

While technology use has allegedly given rise to a perception among Millennials that content and resources should be freely available (Lenhart et al., 2005; CIBER, 2008), the issue of access did not initially appear to be a concern among the student sample within this study, at least in terms of motivations for using library services. Resources and environment were cited as the primary reasons for library use.

However, this general perception was clarified by specific examples when the student sample was asked to indicate where improvements to existing service provision might be made. Responses suggested importance was placed upon convenience, ease of use, and access to, both resources and facilities, mirroring earlier findings from an exploration of resource use which confirmed that ease of use and convenience are primary considerations and take precedence over, for example, factual reliability or authority. The student sample expected longer weekend and weekday opening hours, an improved quantity of core reading materials, increased self-service terminal provision, expanded computing provision, a combination of both electronic resources and print resources, and increased comfort. These findings are perhaps indicative of a generation of habitual Internet users capable of accessing content for free, conveniently, from a location of choice, and are complementary to existing views within recent literature.

The study also found that demand existed for the introduction of fiction collections in academic libraries, which contrasts with assumptions made within the literature (Synovate, 2007). Whilst low readership levels among Millennials for both books and magazines are decried as the by-product of Internet use, this study found that whilst 18-24 year olds may prefer to access news and other aggregated content via the Internet – for the fundamental reason that it is free and easy to obtain – they nevertheless would consider extracurricular materials for leisure use as a key service to be provided by academic libraries.

This supports the view expressed by Koch and Kendall (2003), although specific to the Further Education sector, that educational libraries have a role to play in the provision of fiction collections to encourage reading for pleasure, improve literacy levels, and as a result enhance the profile of the library itself. Although they assert that doing so raises potential challenges – lack of awareness of fiction collections and limited reading time among them – the findings of the study suggest that these would be mitigated by evident demand, supported by the apparent popularity also of DVD collections as raised by some focus group participants.

There is, unfortunately, little discussion on this within the literature and indeed the scope of the study also limits discussion on the potential for academic libraries to explore the provision of fiction collections to satisfy the needs of Millennials. Nevertheless this is a key finding given the potential implications for academic library service delivery to 18-24 year old undergraduates. Future research could explore this in far greater detail, and truly assess whether today's undergraduate students are indeed exhibiting low levels of readership or indeed their level of engagement with literature as distinct from scholarly necessities.

Findings also highlighted the potential for an increased *social* role for the academic library; beyond the café culture into which many academic libraries have been tapping, to hosting social events and essentially assuming a central role in the non-scholarly aspects of student life. This

contrasts sharply with reservations in the literature about doing so; that the social function of a library jeopardises the traditional, *communal*, role in which quiet, serious, study is paramount (e.g. Gayton, 2008). This fear is perhaps somewhat misplaced given that there is certainly scope for an academic library to fulfil both functions and, indeed, the study found that Millennials place equal emphasis on the provision of individual and of group study space and, likewise, of quiet and of noisy designated areas.

This confirms findings by the Council on Library and Information Resources which identified that students who engage with new technologies do not consequently disregard the value of the academic library as a 'contemplative oasis' (Bennett et al., 2005) – that is, they expect both in what Bennett (2009) describes as a library design which satisfies the new learner-centred paradigm emerging in the 21st Century.

This paradigm is one in which the library space is designed so that it supports the self-directed intentional learning of students (Bennett, 2009). Expanding upon the social role of a library should not, and does not need to, compromise the communal role it already serves, and which is evidently still desirable to Millennials. Warnings that architectural planning to separate social functions from communal functions, as advocated within the literature (e.g. Bennett et al., 2005; Ranseen, 2002), will ultimately result in the communal role becoming an underfunded afterthought (Gayton, 2008) are somewhat dramatic, given that the academic libraries in this study, at least, appear to be managing this satisfactorily.

Overall, findings coincide with the general picture painted by recent research that student expectations, driven by technology use, of convenience and ease of access require that services focus on the delivery of resources at the point of need, accommodate diverse methods and access preferences, offer personalisation and provide the opportunity for collaborative activity (Connaway, 2008).

Findings also substantiate the continued assertion that the application of IT is one of the single most important areas to affect future library service provision (JFCLRG, 1993); the issues which emerged from increased technology use over ten years ago are still relevant today.

The cycle of change precipitated by technology use continues to heighten expectations and places pressure upon library services to engage in a continual process of improvement with the development of new solutions to meet those heightened expectations. The cycle is illustrated by Figure 6.1 - there is no starting point as such although the natural trigger, as discussed, is technology use among Millennials; once the cycle begins it is perpetuated at each stage. Figure 6.2 provides an alternative view of this cycle by depicting more clearly the accelerating pace of change in which expectations are continually heightening and widening.
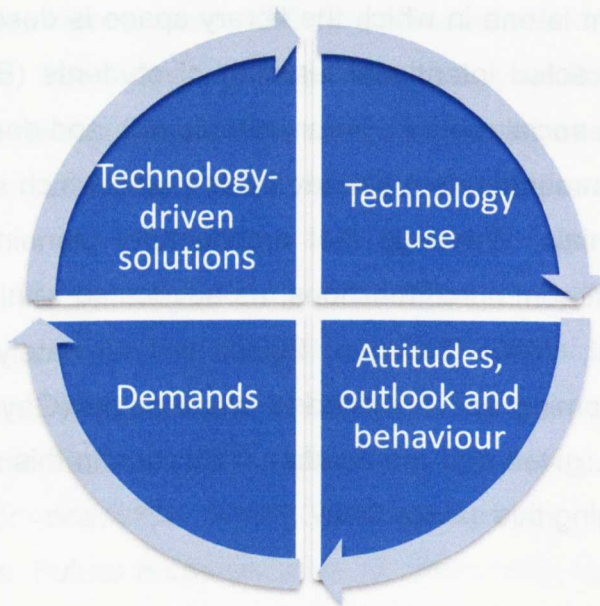
Figure 6.1. Technology as a catalyst for change.
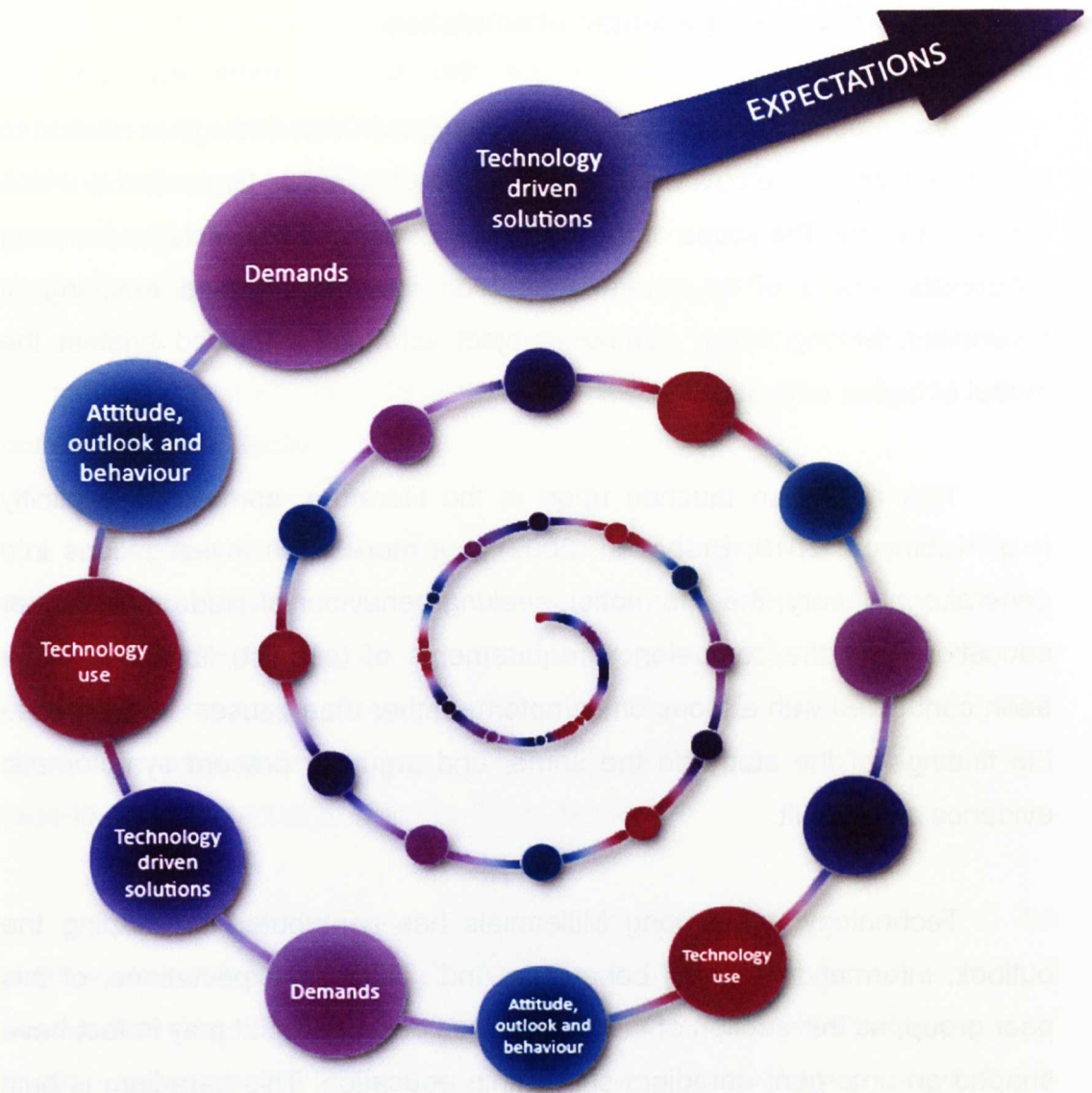
Figure 6.2. The influence of technology in shaping the expectations of Millennials (adapted from Halasz, 2007).

6.1.4 Fostering a new paradigm of education

It also became clear during the investigation that findings in relation to the impact of technology were symptomatic of a much larger issue which was well beyond the scope of the study: the question of expectations among Millennials – and of educators supporting the learning and teaching of Millennials, among which number subject librarians – placed against the model of higher education.

This has been touched upon in the literature, sometimes explicitly (e.g. Robinson, 2010; Brabazon, 2007); but more often investigations into generational theory, the information-seeking behaviour of students in higher education, and the competency requirements of (subject) librarians, have been conducted with a focus on symptoms rather than causes. In this sense the findings of the study do the same, and arguably present symptomatic evidence as a result.

Technology use among Millennials has contributed to shaping the outlook, information-seeking behaviour, and ultimately expectations, of this peer group, as this section of the chapter has described, but may in fact have shaped an emergent paradigm shift within education. This paradigm is built upon the same foundations as the established model: an economic imperative which ostensibly promises to an individual that education will lead to improved career prospects (Robinson, 2010).

To society, the paradigm of education promises that individuals who become educated will ultimately contribute to the economy and as a result improve prosperity for all. Where the new paradigm differs is in how this economic imperative is satisfied, and this is illustrated by Figure 6.3. The ordering of each element within this model is described below.

Technological developments have served as a catalyst for a perception that the underlying economic imperative is more achievable and accessible; this in turn has fostered an increasingly consumerist outlook

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among learners – in this case Millennials. The costs of higher education and the promises made in line with the economic imperative lead to an expectation of success; this expectation is at the heart of the information-seeking behaviour of Millennials and of demands placed by this peer group upon all services, including the academic library. Behaviour which, as this study demonstrated, leads to information resource selection and use – and demands for almost every facet of library service delivery from the provision of self-service terminals to extended opening hours – based upon convenience and ease.

This insistence upon convenience and ease has in turn given rise to an increasing demand for flexible learning among the Millennials Generation, which is demonstrated in the findings of this study: demands for the provision of electronic resources in tandem with print materials, the provision of both quiet and noisy, individual and group, study areas, and of both online and face-to-face support and assistance, for example.

Technology has been pivotal for enabling, and continues to be perceived as a fundamental necessity for developing, methods and means of flexible learning. Technology is also regarded as the solution to issues of content access and it is access to content and to information that both the older and the new paradigms of education glorify as key to academic success. This invariably leads to a focus on the quantity rather than quality of information as Brabazon (2007) asserted.

As such, the use of technology drives change both in the narrow field of vision which looks at outlook, expectations and information-seeking behaviour among Millennials, upon which this study has concentrated, but is also rooted deeper than this. Technology is responsible for enabling the emergence of a new paradigm of education which may ultimately be the true explanation for why the Millennials Generation exhibit the outlook, expectations and information-seeking behaviour described within the literature and by this study, which in turn has impacted upon the subject

librarians who support their learning and the academic library services which they use.

Economic imperative

Consumerism

Flexible learning

Access to information

Academic success
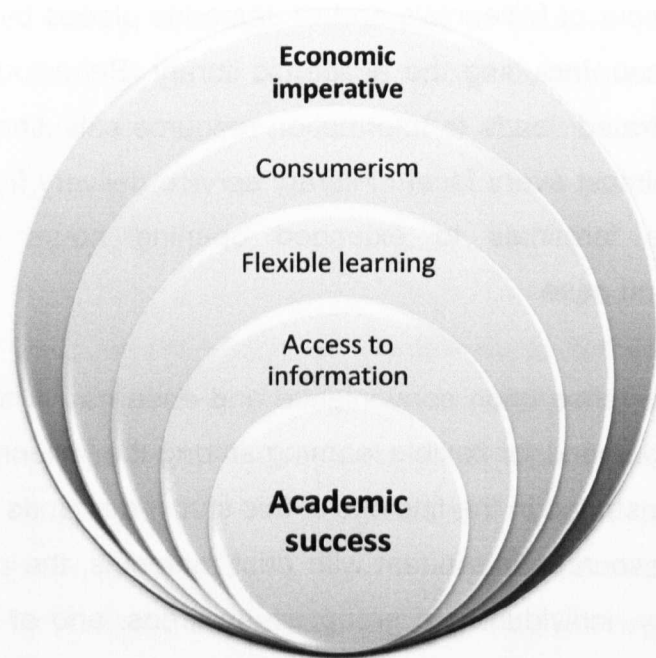
Figure 6.3 The emergent paradigm of education.

6.2   Technology, learner support and library pedagogy

This section of the discussion considers key findings which highlight the impact of technology on pedagogical practice. Following discussion on the information-seeking behaviour of 18-24 year old Millennials undergraduates it is necessary to explore how this study identified changes to the responsibilities and skills of subject librarians, and how these relate to Millennials and changing pedagogical practice following the development of models for supporting the learning and teaching of students. Consideration is then given to the way in which academic libraries, and subject librarians, have engaged with Millennials to date, examining the staff-student relationship and the ways in which subject librarians communicate and interact with Millennials in their own 'digital native' landscape. Finally, the librarian as a learning technologist is then discussed in the context of

findings which suggest an increasing need for subject librarians to support the technology-driven solutions which are demanded by library customers.

6.2.1 Subject librarians' responsibilities and skills

The study identified that a shift from traditional forms of subject support – for example subject bibliography – towards contemporary learner support – for example, as learning advisor – had taken place. The subject librarian is less specialised in a particular subject field (or fields) as a result, and more engaged with teaching and learning issues. At the same time the study also identified that the paradigm of service delivery is now customer-service centred, and findings conflict with the literature by suggesting that subject librarians are increasingly required to handle routine procedural enquiries on enquiry points resulting in an expressed concern among some participants that subject specialism has consequently been eroded in favour of quick answers and quick fixes to the point that students are no longer aware that subject support is available.

Organisational change, with increased levels of collaboration between academic departments and the library service, restructuring, and role evaluations, has also apparently decreased the autonomy of staff. At the same time that the traditional bibliographical functions of a subject librarian are being, or have been, displaced as a result of a shift in service paradigm, there are new responsibilities which have been added to the subject librarian's portfolio of activity. Chief among these is an increased para-academic role with increased involvement in teaching and learner support (Pinfield, 2001a; Biddescombe, 2002; Hardy & Corrall, 2007; Corrall & Keates, 2011), as predicted by John Fielden Consultancy (1993). The study highlighted a belief not only that teaching responsibilities have increased but that pedagogical methods have shifted toward increased emphasis on task-oriented, simplified, and varied instruction designed to maintain the interest and involvement of undergraduates, as Brabazon (2007) described.

Teaching activity appears to have moved towards the provision of general instruction, broadening into other academic and study skills, as well as library-specific, or information, instruction supporting assertions within the literature that boundaries between teaching and library staff have blurred (SCONUL, 2001; Corrall, 2001). This phenomenon appears to have taken place relatively recently, given that the study found those who held a teaching qualification had obtained an award in the last ten years, and did so predominantly via part-time study, suggesting they were employed at the time, and also – perhaps – because only a quarter of subject librarians who participated actually held a formal teaching qualification (most commonly the PGCHE). These levels are similar to those identified by Bewick and Corrall's (2010) national survey. The remainder acknowledged that they had obtained the knowledge and skills to engage with increased teaching responsibility, and indeed other responsibilities, through an experiential approach, rather than through formal education. This corroborates findings which suggest that both opportunities for, and take up of, formal education in teaching skills are poor and that information professionals may not be adequately prepared for engaging with increased teaching responsibilities (Albrecht & Baron, 2002; Julien, 2005; Sproles et al., 2008).

Nevertheless, contemporary methods do recognise the value and merit of experiential work-place based learning and mentoring, as described by Broady-Preston (2009) and Corrall (2011) for example, can be recorded in (increasingly electronic) portfolios or personal development plans (PDPs) to demonstrate both practical and theoretical knowledge (Brine, 2005). Portfolios of this sort are developed and led by the individual, and the contents – annotated to convey meaning – should be chosen selectively with relevance to the skills and criteria being addressed: validity, reliability, sufficiency, authenticity and currency of the evidence are all essential (Brine, 2005).

Ultimately a portfolio built through experiential work-place based learning:

> "...should provide both recognition of the full range of skills that information and library professionals use in their work and enable individuals to compete effectively in the marketplace by being aware of the skills that they have developed through their own reflection" (Brine, 2005:63).

The findings of this study suggest that on-the-job experiential skill and knowledge acquisition has been taking place though it was beyond the scope of the project to explore the means or effectiveness by which this may have been recorded by participants. Subject librarians expressed high levels of self-described competency in the skills required for teaching and in personal and interpersonal skills despite the poor take up of formal teaching qualifications, for example. Subject librarians considered themselves most competent in, and most confident with, teaching basic information skills, teaching effective Internet use, and teaching advanced information skills although the extent to which this self-described competency is grounded in pedagogical understanding is, however, unclear.

A comparison of reported competency in a selection of teaching skills between those with, and those without, formal teaching qualifications superficially suggested that those without a formal teaching qualification believed themselves to be as competent in teaching as those with one. This complements recent findings (Bewick & Corrall, 2010) in the literature which also identified confidence among staff in delivering teaching with participants believing they had sufficient knowledge to do so. Indeed, the study identified a perception among subject librarians that formal teaching qualifications may have no net benefit for staff with teaching responsibilities, which also matches the findings of Bewick and Corrall (2010) who noted that some individuals questioned the relevance of pedagogical theory to their particular circumstances. This contrasts sharply with the strong case put forward in the literature for a more formal approach to obtaining pedagogical knowledge

(e.g. Bell & Shank, 2004; Peacock, 2001; Powis & Webb, 2004). It is possible that individuals with a formal teaching qualification may be better placed to judge their own ability, and that those without a formal teaching qualification over-estimated their own ability or under-estimated the benefits and knowledge which could be acquired from a teaching course. This is made all the more pertinent by the low level of importance placed by participants on the need for knowledge of pedagogical practice and theory, a point also highlighted by the finding that those without a formal teaching qualification indicated they had no desire to obtain one in the future. A disjoint between competency and perceived value in formal education in pedagogical practice seems apparent and is compounded by findings which suggested that not all staff were comfortable with their teaching role, or with their ability to manage increased responsibility of this sort, which again confirms previous research (Bewick & Corrall, 2011).

The acquisition of an academic library/information qualification, in contrast, seems to be regarded as an almost tacit requirement for a career in academic librarianship given the findings of this study. Almost all subject librarians who participated had obtained some form of academic qualification from postgraduate certificate level to Masters degree. An academic library/information qualification, aligned with a formal competency statement from the relevant national professional organisation, represents – or at least may be perceived to represent – a commitment to core professional values and ethics, and signals that the holder of such a qualification has sufficient knowledge and skills to be adequately prepared for the workplace (e.g. ALIA, 2005). These qualifications had been obtained by participating subject librarians, on average, some ten years ago. Whilst subject librarians may have since updated LIS competencies through experiential – or even additional formal – learning, it is possible that a dichotomy exists between the value placed on previously current academic library/information qualifications and the experiential approach to acquiring pedagogical knowledge. However, if teaching responsibilities are only a part of their role, albeit one which is growing, it may not be surprising that many subject

librarians do not yet perceive any immediacy to the need to add a formal education qualification to their existing set of formal competencies.

Accredited library/information qualifications serve as an important foundation for establishing, or informing, the fundamental skills and responsibilities required by information professionals. However, given the findings of this study, the acquisition of formal understanding of pedagogical practice, by way of a teaching qualification, must be regarded as more than an auxiliary nicety. The current state of teaching skill acquisition among subject librarians appears to be on a continuum from reluctant learners, who have no desire to obtain any teaching skills, to those who attend one or two-day courses run by professional bodies such as CILIP, to 'short-course' CPD programmes over a longer period of a month to three months, to the more formal qualifications at PGCert or Masters level.

CPD and lifelong learning are an assumed responsibility of being an information professional, embedded within the CILIP code of professional practice (CILIP, 2011a). As educators, and on this basis, information professionals must recognise the value of augmenting existing, core, information skills with pedagogical knowledge, whatever the method for obtaining that knowledge. Such methods might include acquisition of a formal teaching qualification, or generic LIS Masters or specialist programme – such as the MA in Information Literacy offered by the Information School at the University of Sheffield – or conventional CPD-based activities such as attendance at short courses, to more contemporary experiential work-place based learning and mentoring. Doing so would progress subject librarians along this continuum and ultimately equip them with the skills necessary for becoming 'blended librarians' as described in the literature (e.g. Corrall, 2010; Bell & Shank, 2004).

6.2.2 Engaging with Millennials

Given that a shift in emphasis has taken place within the portfolio of activity of subject librarians, from traditional functions such as reference support, to increased and direct teaching responsibilities, it is important to understand the relationship between subject librarians and Millennials, and the value placed on library staff by Millennials, to assess how Millennials are currently served by libraries and subject librarians.

With increased teaching responsibilities comes an implicit need for increased contact and engagement with those being taught, and the need to use all relevant – and effective – media for doing so. The study found that a variety of methods are used to deliver teaching to undergraduates, including delivery face-to-face in groups of all sizes, the provision of one-to-one instruction and on-the-spot instruction at the point of need, and the production and dissemination of training documents, guides and other similar instructional materials. Relatively traditional methods remain the predominant means by which subject librarians appear to be delivering instructional sessions and VLEs, despite having been hailed within the literature (e.g. Biddescombe, 2002) as an essential platform for information professionals to deliver instruction, do not appear to be widely used in contrast. Indeed, the study also found that subject librarians were least confident in their skills required for creating VLE resources. This corroborates the findings of Corrall and Keates (2011) who identified limited levels of engagement among subject librarians with VLEs, which they attributed to technical issues and organisational culture.

The study also found that subject librarians spent around 3 hours each week preparing and delivering instructional sessions to undergraduates, compared with higher average rates in the literature (e.g. seven hours for full-time staff and four hours for part-time staff (Bewick & Corrall, 2010)). Such a low level of involvement in teaching activity contrasts with the prevailing assumption in the literature that teaching responsibilities have increased; however it is possible that this figure is distorted by factors

such as workload variations throughout the year rather than a real lack of engagement with teaching activity. Outcomes evaluation and learner needs assessment appeared to be neglected among the pedagogical methods used by subject librarians, suggesting that those delivering instructional sessions may not necessarily be engaged in tailoring those sessions to the learning preferences of Millennials or in measuring the effectiveness of their teaching. This confirms findings in the literature which also identify low levels of engagement in assessment (Bewick & Corrall, 2010).

In tandem with this, the study also found that assessment of user needs took place on a 'continual' basis, suggesting that the evaluation of service delivery and of the needs of Millennials as academic library users, is undertaken informally and on an ad-hoc basis rather than through a formal assessment process which might involve the implementation of standardised instruments, such as LibQUAL+, to measure performance and satisfaction. The study found that subject librarians tended to assess user needs on an individual, or localised, basis outside the scope of an overarching library service strategy for meeting the needs of users, and this confirms assertions within the literature that service evaluation is not yet fully appreciated by the profession (Lakos & Phipps, 2004) and that the culture of assessment heralded by instruments such as LibQUAL+ has yet to develop (Wei et al., 2005).

Nevertheless, the study found that, within the informal ad hoc method of evaluation, a range of approaches appear to be used including surveys, focus groups, diagnostic testing, and reference interviews. There appeared to be a correlation between confidence in ability and perceived importance of skills and knowledge to the current roles and responsibilities among subject librarians, indicating a link between experiential competence and confidence (staff who regularly utilise a given skill becoming more confident in their ability to utilise that skill). With this in mind, low levels of confidence in familiarity with research methods (both quantitative and qualitative) and a perception that this knowledge is unimportant to the current role, suggested

subject librarians who took part in the study may not be equipped with the necessary skills to fully identify the needs of Millennials and consequently the ability to tailor services to satisfy those needs. However, it is important to note that participants may not have established the link between *research methods* and *service evaluation*, possibly associating 'research methods' with knowledge of complex methodologies in support of research students and academics. Despite this, findings did identify some understanding of those needs among subject librarians who expressed the view that library instruction needed to tackle increasingly lower levels of general, as well as information, literacy among undergraduates arriving from school. The importance of educating students about plagiarism and referencing was highlighted in particular. These problems have emerged, according to participants in the study, from increasing consumerism among students and a desire to obtain information quickly and electronically, and as a consequence critical thinking and academic skills have been negatively affected. These views confirm those within the literature (e.g. Brabazon, 2007).

The need for emotional intelligence among subject librarians, in order to more effectively engage with library users including Millennials, has also been raised within the literature (e.g. Promis, 2008). The study confirmed that view, with Millennials having emphasised the importance of 'affect of service' – encompassing staff empathy and willingness to help – and highlighting the need for good customer care and a friendly and approachable demeanour among library staff. Subject librarians considered themselves competent across a range of personal and interpersonal skills, and viewed the relationship between staff and students to be a positive one. Subject librarians also perceived their engagement with Millennials to be productive, and found it easy to communicate with them. The study found that staff spent in the region of 7 to 9 hours per week in contact with undergraduates, which constitutes a substantial period of time working with, and supporting the learning of, Millennials. Estimates of total contact hours are, however, difficult to firmly establish and should be considered with some

caution, as Hardy and Corrall (2007) also found, given the potential for variance across subject disciplines, institutions and individuals.

A range of methods appeared to be used by staff to engage with Millennials, including the enquiry desk, email, prearranged one-to-one appointments and committees and other meetings. Pre-arranged one-to-one appointments, the enquiry desk, and email were also considered both the most productive and the easiest to use of communication methods. These findings confirm those in the literature (e.g. Hardy & Corrall, 2007), which suggests that the primary methods of communication used by subject librarians are predominantly traditional. There appeared to be limited attempts to engage with Millennials as 'digital natives' in the digital landscape. Instant messaging and social networking, for example, were not used at all and indeed were held in low regard by subject librarians. However, the time span between data collection and reporting should be acknowledged: institutions participating in the study have since begun to exhibit some enthusiasm for Web 2.0; three of the four library services now make use of Twitter, two make use of RSS feeds to provide news to library users, one maintains a Facebook presence and one also provides a podcast on referencing. Clearly there is more scope to take advantage of the opportunities described by Godwin (2007) to engage with Millennials in the digital landscape, but there has certainly been progress towards doing so.

The study also found that the effectiveness of communication with students might be questioned: although subject librarians are clearly engaging with Millennials, student participants expressed dissatisfaction about the affect of service and appeared to hold library staff in poor regard with incidents of poor customer service having tarnished the overall reputation of the library in some cases. The preference among Millennials for self-service facilities, and a lack of appreciation for the subject support available to them, suggests a possible disconnect between Millennials and library staff which needs to be remedied. It may be that developments which have taken place at participating HEIs since the initial fieldwork undertaken

by this study, to make use of Web 2.0 tools such as social networking, blogs and RSS feeds, represents an attempt to do so.

6.2.3 Supporting technology-driven solutions

Integral to supporting the learning and teaching of Millennials, which it has been established is an increasing role requirement, and fundamental to engaging with Millennials as digital natives, is a need for the subject librarian to act as learning technologist. As a learning technologist, the subject librarian is best placed to undertake these two activities by obtaining the relevant skills to implement, tailor, and support technology-driven solutions designed to satisfy the expectations of Millennials. Subject librarians in the study acknowledged the impact of ICT as a fundamental catalyst for change in their role and responsibilities, resulting in greater emphasis on the delivery of services, support, and instruction through technology-driven solutions. Findings in the study made clear the need to distinguish between the basic precept of subject librarians providing learner support – something which has not changed – and the methods and means by which this is carried out – something which has, considerably. Views which have been expressed over a period of time within the literature, urging the profession to engage with technology-driven solutions, are consequently confirmed by this study (e.g. Biddiscombe, 2002; Costello et al., 2004; Quinsee, 2005; Sayers, 2007).

Academic libraries are increasingly required to support and engage with students remotely, and the means of doing so are progressively diversifying beyond the mere provision of e-resources. Given the equal weight placed upon delivery of services and content in both traditional, physical, methods and electronic, or virtual, methods primarily for convenience, coupled with a desire for extended opening and access across weekday and weekend hours, subject librarians must be prepared for supporting a library service which increasingly makes use of technology to satisfy the needs and expectations of Millennials. The study found not only

that subject librarians were doing so, but that, as a consequence, they had expanded their portfolio of activities beyond specialist subject support to web-editing and the provision of IT support to students as described within the literature (e.g. Fisher et al., 2005; Gerolimos & Konsta, 2008).

Subject librarians in the present study acknowledged that they had yet to explore the use of Web 2.0 applications, such as Twitter and Facebook, for the purposes of engaging and communicating with Millennials. Given that this study identified social networking as the predominant purpose for which Millennials use the Internet, findings ostensibly suggested scope for subject librarians and academic libraries to expand their service delivery to Millennials in their own digital landscape. However, as previously noted, the time span between data collection and reporting must be acknowledged and it should be noted that the institutions which participated have now begun to adopt Twitter, Facebook and other Web 2.0 tools to engage with students. This suggests that the cautious approach propounded by, for example, Hutchings (2008), in the use of social networking sites to deliver services and learner support, has not only been observed, but that libraries have analysed and identified appropriate use to target Millennials effectively in their digital environment. Again, this would present a valuable investigation in any future research exploring the use of Web 2.0 utilities and applications by subject librarians, to shed more light on the matter.

This raises the question as to whether expanding use of asynchronous methods of communication possibly compounds criticisms from subject librarians raised specifically in relation to the strong email culture which was identified in the study. Staff indicated that engaging with students remotely had negatively impacted on the level of personal, face-to-face, contact between library staff and students. The importance placed upon face-to-face contact within the literature (e.g. Holland, 2000) is possibly being disregarded in favour of adopting technology-driven solutions at the expense of traditional forms of communication and contact.

The scope of the study precluded any assessment of whether staff felt remote forms of communication were poorer in quality than face-to-face contact, but findings from the study did indicate a productive and positive relationship between staff and students, an ease with which subject librarians found communication with Millennials, and a not insignificant period of time spent by subject librarians engaging with Millennials on a weekly basis. A negative perception about a relatively traditional method of (electronic) communication may also be indicative of a reluctance to expand on technology-driven methods of communication – to encompass social networking, for example.

The impact of technology on service delivery is also viewed with some caution among subject librarians in relation to teaching, with reservations expressed over the pedagogical value of new technologies. The study found that some subject librarians perceive some form of threat from the Internet, and Google Scholar, though it was unclear whether this was in the form of a challenge to the validity, relevance and value of subject librarians and academic libraries as perceived by Millennials or because it was felt that the Internet, and Google Scholar, stymie progress made by subject librarians to impart information literacy to remedy the information-seeking behaviour exhibited by Millennials. Findings in this sense support the argument expounded by Levy and Roberts (2005) who cautioned that the adoption of technology-driven solutions for learner support should not result in the medium becoming the message, and Brabazon's (2007) view that technology-driven solutions must have pedagogical value else there is a risk that the (subject librarians') focus is on satisfying customer (Millennial) needs at the expense of increasing self-sufficiency.

The reality of this is partly borne out by the findings of this study in that convenience and ease of use were evidently key motivations for resource selection and use among Millennials. Yet, at the same time, the pitfalls of *Wikipedia* specifically, and of the Internet in general, were also widely acknowledged by Millennials. The convenience of accessing *Wikipedia* as a starting point in the research process, and of browsing for

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information using the familiar Google search engine, make websites such as these too attractive for Millennials to ignore. Subject librarians adopting the role of learning technologist would therefore be well placed to appreciate and take advantage of this, on the assumption that library services and systems which are equally convenient and easy to use would also prove equally attractive.

Despite some degree of caution, voiced from some quarters, the findings of this study identified efforts by subject librarians to seek relevant skills which would enable them to undertake, and perform more effectively in, the role of learning technologist. It is pertinent to note that staff with academic library/information qualifications obtained relatively recently, within the last ten years, demonstrated greater awareness of recent technological trends compared with those holding older qualifications. The findings of the study therefore suggest that progress has been made in line with updating LIS curricula, as advocated within the literature, to more accurately reflect the importance of IT skills (e.g. Tenopir, 2002; Fortney, 2009). It is also important to note that any reluctance evidenced within the findings of this study could well be countered by findings which also suggested an evident recognition of the need to obtain skills to meet the demand for supporting technology-driven solutions.

The trend identified within the literature (e.g. TFPL, 2001; Corrall, 2005; Parry, 2008) of an increasing reference to 'IT skills' in job adverts has almost certainly been noted within the profession itself. Whilst professional development should encompass a number of routes (e.g. Kennedy & Abell, 2008), the study found that subject librarians identified short courses as an appealing and appropriate means by which competency with creating and editing webpages, an awareness of emerging technologies, knowledge of learning preferences, and skills to teach specialist ICT skills to Millennials, could be obtained. Any reluctance which might have been superficially suggested by the findings of this study is mitigated by an apparent acceptance that ICT skills are an essential precursor to supporting

technology-driven solutions, and that such solutions are necessary even if they are implemented at the expense of face-to-face contact with students, in order that the subject librarian is positioned with the necessary skills to function as a learning technologist.

6.2.4 The next-generation blended librarian

The study found that subject librarians are required to balance a total of four skillsets in support of the expectations placed upon academic libraries by Millennials and their pervasive use of technology for scholarly activity. These are listed below, ordered with some thought on the basis of when, in the evolution of the subject librarian role, a given skillset seems to have been recognised as a necessity:

1. Information and library skills;
2. IT skills;
3. Teaching and pedagogical skills;
4. Emotional intelligence.

The combination of the first two of these gave rise to the concept of the 'hybrid librarian'; a professional equipped with the core 'traditional' information and library skills and also the skills to develop, maintain and support technology-driven solutions (e.g. Abbott, 2003; Allen, 2005; Corrall, 2011). The 'hybrid librarian' role emerged to support the converged – usually IT and library – services offered by hybrid libraries (e.g. Field, 2001; Hanson, 2005) which were developed in response to unified institutional information strategies (Corrall, 2010). This study confirmed the view that the combination of information, library and IT skills are no longer sufficient for a subject librarian to satisfy all of the demands being placed upon them, particularly in relation to learner support (e.g. Bell & Shank, 2004).

Instead, the subject librarian is now required to combine teaching and pedagogical skills with their existing information/library and IT skills and engage with processes represented in the ADDIE model (analysis, design, development, implementation, and evaluation) in order to integrate instructional design and technology skills into their work (Bell & Shank, 2007). The combination of skillsets, targeted in this way, essentially combines the role of the information professional with that of the learning technologist, and gives rise to the concept of the 'blended librarian'; an individual with information and library skills, IT skills, and the necessary pedagogical knowledge to apply technology effectively in the learning process to enhance the library experience (Bell & Shank, 2004; Bell & Shank, 2007; Corrall, 2010).

Blended librarianship needs to be applied by design, however (Bell & Shank, 2007). The blended librarian who applies design thinking is an individual able to: discover and develop tools to facilitate integration of the library into teaching and learning; create a library experience which enables library users to gain a deeper understanding of gathering, organising and analysing information in the pursuit of new knowledge; engage with continuous service performance improvement to better develop resources and services; and develop better connections between the library, its staff, and its users (Bell & Shank, 2007). In practical terms, blended librarianship by design combines information technology skills with instructional design and technology skills in order to develop, for example, digital learning materials and online communities to facilitate the exchange and development of new knowledge (Bell & Shank, 2007). Design thinking is therefore an essential bridge between, and supplement to, library, IT and instructional skills.

However, Bell and Shank's (2007) concept of the blended librarian is still insufficient to describe the competencies and skillsets required by today's subject librarian: whilst it recognises the meshing of multiple skillsets, and presents a very valuable concept of academic librarianship by design,

this model lacks sufficient definition in relation to the importance of emotional intelligence.

The study found that the affect of a library service is as important to Millennials as the practical information resources it offers and the physical library environment. Given the digital environment in which Millennials operate the development of personal and interpersonal skills – already identified to be a fundamental element of a librarian's skillset (e.g. Abels et al., 2003; CILIP, 2004; ALIA, 2005; Corrall, 2005) – need to move beyond those geared towards engaging with users in traditional face-to-face settings to those associated with remote and virtual settings; from virtual learning environments (VLEs) to social networking sites, blogs, wikis and other forms of asynchronous communication, as well as synchronous methods of communication such as instant messaging.

Providing learner support in such environments requires an extension of the generic fundamentals of customer service to an appreciation of how best to support individuals in environments which lack many of the usual cues, such as body language, from which face-to-face communication benefits, as well as to an understanding of how to impart information in remote settings effectively with an awareness of the strengths and limitations of the technology being used. Collaboration, negotiation, and project management skills are also increasingly important for subject librarians in order to work with IT professionals, academic colleagues, or external third parties in the development and support of technology-driven services geared to meeting the expectations of Millennials.

The concept of the blended librarian therefore needs to move to a new model of the 'next-generation blended librarian'. The next-generation blended librarian skillset required by subject librarians who wish to effectively and successfully engage with the Millennials Generation is one which combines the four elements listed above – adding emotional intelligence which accounts for operating in remote and virtual environments as a key component. As a learning technologist, equipped with essential IT skills, and

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with strong emotional intelligence, the subject librarian is positioned to engage with Millennials in their own 'digital native' environment, to make use of social networking and other electronic means of communication to meet with Millennials at the point of need.

The subject librarian who is both emotionally intelligent and holds pedagogical skill and knowledge is also best placed to fully appreciate the learning preferences and information-seeking behaviour of the Millennials Generation. As a learning technologist equipped with core information and library skills the subject librarian is then positioned to deliver targeted, effective, outcome-based information and e-literacy instruction, and other learner support, using virtual learning environments to satisfy the demand among Millennials for flexible learning and to meet them again in the digital landscape. The blended librarian is one with all of these skillsets, able to support all four key activities, and this is illustrated by Figure 6.4 below.
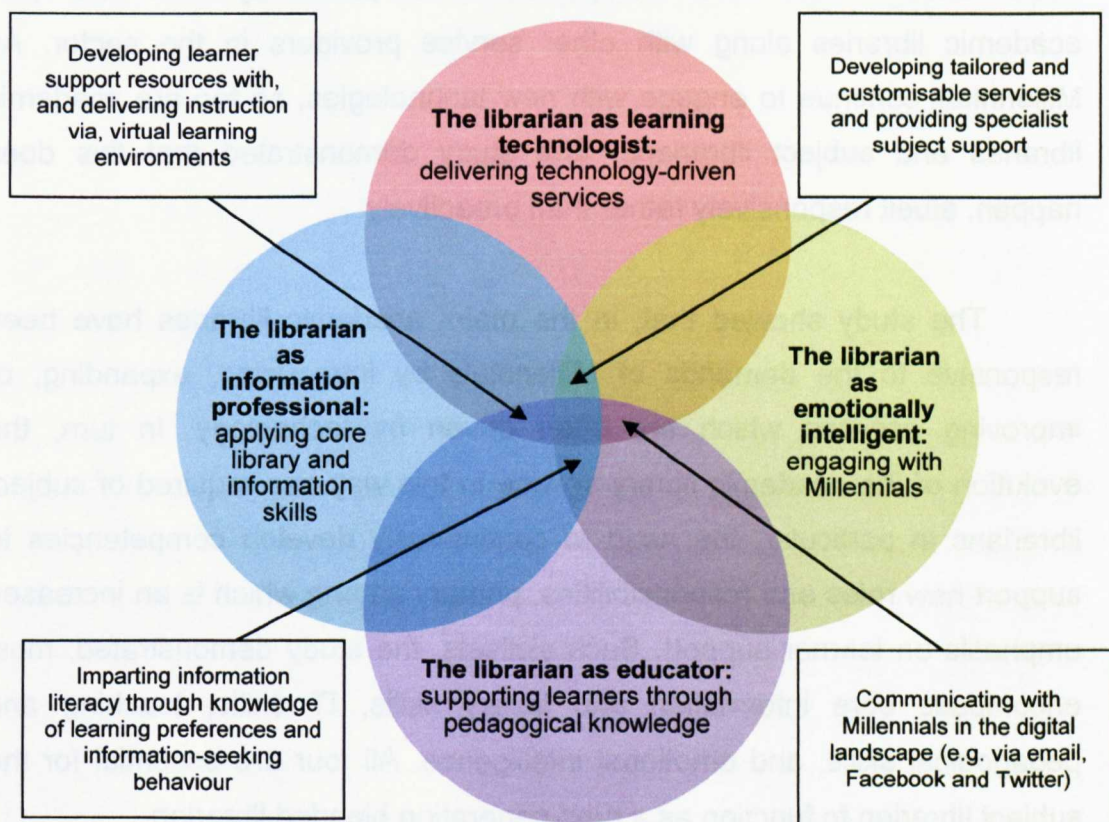
Figure 6.4. The next-generation blended librarian.

Conclusions

This chapter presented a discussion in which technology has been described as the integral catalyst for change: pervading and underlying many of the characteristics and the information-seeking behaviour of Millennials – both shaping and perpetuating those characteristics; and driving the pedagogical practice of subject librarians in the academic library setting in response to the expectations which have emerged among Millennials as a result. The two are interrelated, cyclical and the net result is that student expectations are continuously heightened (and widened).

The use of technology among Millennials shapes attitudes, outlook and behaviour (including most pertinently information-seeking behaviour). These in turn influence expectations: expectations for services to satisfy a consumerist approach to higher education, exhibited in part by surface scanning information-seeking behaviour and a desire for mass, personalised, customisation. These sorts of expectations are placed by Millennials upon academic libraries along with other service providers in the sector. As Millennials continue to engage with new technologies, so too are academic libraries and subject librarians. The study demonstrated that this does happen, albeit responsively rather than proactively.

The study showed that, in the main, academic libraries have been responsive to the demands of Millennials by introducing, expanding, or improving services which are often driven by technology. In turn, the evolution of the academic library service in this way has required of subject librarians in particular, the need to continuously develop competencies to support new roles and responsibilities, primary among which is an increased emphasis on learner support. Such skillsets, the study demonstrated, must encompass core information and library skills, IT skills, teaching and pedagogical skills, and emotional intelligence. All four are essential for the subject librarian to function as a next-generation blended librarian.

The study also identified a deeper, more complex, underlying influence from an emergent paradigm of education in which consumerism has led to a demand for flexible learning facilitated by technology. Within this paradigm, technology is also heralded as the solution for unlocking access to content, which in turn is perceived as the key to academic success. Consequently, the focus among Millennials and educators risks being waylaid from quality to quantity.

The findings of this study therefore contribute to an understanding of the impact of the Millennials Generation upon academic libraries, and the skills of subject librarians, demonstrating that technology underpins a cycle of change and an emerging paradigm of education. The models presented in this chapter illustrate the elements of this cycle, the building blocks of the emergent paradigm of education, and the competency skill sets required for subject librarians to function as 'next-generation blended librarians'.

7   Conclusion

This chapter draws together the strands of the study, and the thesis, by presenting a summary of findings, reflections on the research methodology and project, an outline of contributions to the current body of knowledge in the field, consideration of implications for future research and, finally, a set of recommendations arising out of the findings of the study.

Findings are summarised with reference to the initial research questions and overall research objectives and include an overview of the characteristics of the Millennials Generation, a review of the expectations of Millennials placed against current service performance of academic libraries, and an outline of the strengths and weaknesses of the competencies and skills held by subject librarians in relation to service provision for Millennials. Contributions to the existing body of knowledge in the field are then described, leading with the congruent approach taken by the study in which distinct issues were explored and drawn together to more effectively understand academic library service provision and the competencies of subject librarians in relation to the Millennials Generation.

A reflection on the research methodology, and its limitations, considers the pragmatic approach to undertaking research which made use of both qualitative and quantitative methods in a multilevel triangulated mixed methodology. Implications for future research are then considered, leading not only from the findings of this study but also in consideration of the limited scope of the project and the issues which remain unaddressed. Alternate research designs are also considered, with particular reference to correlational research in the form of longitudinal studies. Finally, recommendations arising from the findings of this study are then listed, with the intent of suggesting means by which academic libraries, and subject librarians, can potentially bridge any gaps between current service delivery and the expectations of the Millennials Generation.

7.1   Summary of findings

This section of the chapter provides a final summary of the findings of the study in relation to the initial research questions and research objectives. The research questions asked:

RQ1: who are Millennials and how can they be characterised?;

RQ2: how are Millennials served by libraries and librarians?;

RQ3: is there an increased demand upon subject librarians to undertake new or increased responsibilities and what are the implications for competency requirements?

The objectives of the study were:

1. to identify the defining characteristics of the Millennial Generation;

2. to explore the expectations for, and perceptions of, library service provision among members of the Millennials Generation;

3. to consider the strengths and weaknesses of competencies and skills currently held by subject/liaison librarians and how these relate to the expectations of service provision among Millennials; and

4. to consider strategies by which potential gaps in service provision or professional competencies might be addressed.

The final, fourth, objective is addressed by the Recommendations section of this chapter.

7.1.1 Characteristics of the Millennials Generation

The Millennials who took part in the study at the four participating HE institutions exhibited high levels of technology use and widespread levels of access to substantial amounts of information through their use of the Internet. The majority owned a PC, benefited from Internet access at both home and at University, and spent between 25 and 36 hours online each week. They accessed the Internet as a means of supporting their academic work, as well as for non-scholarly activity, and did not appear to be affected by any digital divide. Millennials who participated expressed that they felt at ease with technology, and considered it to be an intrinsic and entrenched part of their lives. From this, the study consequently found that the Millennials who participated in the study could be described as being 'wired' to the networked world.

Social networking appeared to be a fundamental motivation for Internet use and Millennials who participated in the study highlighted the ease and convenience of establishing and maintaining channels of communication with their peers and family. This relates to a preference for (circumstantial) collaborative academic study which the sample also exhibited. The study therefore found that the Millennials who participated could be described as socially and collaboratively minded. Findings did contrast with existing research on the issue of whether Millennials are more involved with content sharing than content consumption when engaged in activities on the Internet, identifying that the latter still seemed the predominant focus.

Millennials who participated in the study self-identified as ambitious, driven individuals with a materialistic mind-set which has enjoyed greater levels of freedom than previous generations, resulting from an egalitarian environment during their upbringing. Participants suggested this had been precipitated by the advent and growth of technologies such as the Internet. The study found that a consumerist outlook among the sample also existed, coupled with a demand for mass customisation, that impinged upon

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academic instruction. Millennials who participated expressed frustration with instructional methods which catered to the masses, such as lectures. The ease of use of particular sources of information overwhelmingly determined usage levels, irrespective of quality or reliability. Millennials who participated in the study expressed awareness of the limitations of information resources but also indicated that ease and convenience outweighed such limitations. The study found experiential learning, rather than instruction, underpinned technology use among Millennials who participated.

From these findings the study identified that the use of technology underpinned the characteristics and outlook of Millennials, and their information-seeking behaviour, and that technology use had also fundamentally impacted upon the paradigm of education. As a consequence of the characteristics exhibited by Millennials, the study identified an emergent paradigm of education in which technological developments, fostering a consumerist outlook, have led to information-seeking behaviour based primarily upon the selection of resources in terms of convenience and ease. And, that consumerism has given rise to a demand for flexible learning in which technology is perceived as the solution to content access; the resulting focus is therefore on information quantity rather than quality.

7.1.2 Service delivery for Millennials

Data revealed that expectations among Millennials placed against academic library service delivery were underpinned by the characteristics described above which have led to the view that services should be customisable, convenient and easy to use. High expectations were evident across all four institutions, and only one HEI fully satisfied the minimum levels of service performance which Millennials there expected. Computing provision and the provision of quiet areas for study were both criticised by participants whilst the highest levels of satisfaction related to self-service

terminal provision, the provision of audio-visual equipment, and library induction and instruction. The study concluded that delivering to self-empower seemed at the heart of defining expectations and satisfaction levels among Millennials.

Equal emphasis was placed on the delivery of services in a physical and an electronic (or virtual) setting by Millennials who participated in the study: for example the provision of both print journals and e-journals, and of virtual and face-to-face support. Coupled with the longer opening hours at both weekends and during week days, the study concluded that Millennials sought to access resources and information without barriers, as they are accustomed to doing on the Internet.

Data also revealed three expectations which had not been anticipated: first, that academic libraries should exhibit adequate (or superior) affect of service; second, significant interest in the introduction of fiction collections; and third, that academic libraries should undertake activities leading to an enhanced social role.

Although affect of service is identified by the LibQUAL+ instrument as a key facet of library service performance, the correlation between scholarly activity and Internet use, coupled with satisficing and surface-scanning information-seeking behaviour among Millennials as described within the literature, led to an incorrect presumption that Millennials did not consider the responsiveness, helpfulness or indeed fundamental physical presence of library staff within the library environment, to be as important as they did.

Nevertheless, the study did find that although affect of service was a key concern for Millennials, library staff were primarily seen as a source of procedural or directional support only rather than reference or specialist subject support. Assumptions made in the literature that young people are reluctant readers were also challenged by data obtained in the study which found that Millennials who participated expressed a desire for the introduction of fiction collections in academic libraries.

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Whilst Millennials expressed a preference for news and aggregated content accessed via the Internet there was also an evident interest in the provision of extracurricular reading materials which are free and easy to obtain. Millennial participants also expected academic libraries to take on an increased social role, beyond a basic café offering to a more active role in hosting social events or providing a venue in which the non-scholarly aspects of student life might take place.

7.1.3 Skills and competencies among subject librarians

When exploring the changing demands placed upon subject librarians, and whether a shift in the role and responsibilities of subject librarians had taken place, the study confirmed that increased emphasis on learner support and customer service had displaced traditional forms of specialist subject support. Participants expressed concern that they were increasingly required to handle routine procedural enquiries on enquiry points, the consequence of which had been an erosion of awareness among Millennials that specialist subject support was in fact available. At the same time subject librarians also identified increased teaching responsibilities in a new para-academic role in which they had been placed. The extent of this at the four participating HEIs in this study did not appear to be significant, however, with subject librarians spending on average 3 hours per week throughout the year on the preparation and delivery of instructional sessions to Millennials. However, this could equate to nearer one day per week during the more busy teaching periods of the year.

Where staff are involved in teaching activities, a variety of instructional methods appear to be used to deliver learner support to Millennials. These methods ranged from face-to-face instructional sessions of varied size to the provision of one-to-one instruction and on-the-spot assistance at the point of need. The dissemination of training documents, guides and other

instructional materials also remains a key activity. At the time of the study teaching activities remained relatively traditional, a finding in line with several other studies in the UK and US; virtual learning environments, in particular, along with other forms of virtual or online instruction, did not appear to have been taken advantage of by subject librarians. Indeed, subject librarians who participated expressed low levels of confidence in their ability to create VLE resources.

The study also identified minimal take-up in the use of outcomes evaluation and learner needs assessment among the pedagogical methods used by subject librarians, indicating that instructional sessions may not have been tailored to the learning preferences or expectations of Millennials (and, indeed, that teaching effectiveness had not been measured). There was, however, evident understanding of some of the issues associated with providing learner support to Millennials; subject librarians expressed the view that library instruction needed to tackle increasingly lower levels of general, as well as information, literacy among undergraduates arriving from school, and the importance of educating students about plagiarism and referencing was highlighted in particular. These problems have emerged, according to subject librarians who took part in the study, from increasing consumerism among students and a desire to obtain information quickly and electronically, and as a consequence critical thinking and academic skills have been negatively affected.

The study identified that the majority of subject librarians who participated had acquired pedagogical knowledge experientially rather than through a more formal or structured means such as the acquisition of an academic qualification. The majority of subject librarians who participated in this study expressed confidence both in their ability to take on increased teaching responsibilities and to support learners – including with basic information skills, teaching effective Internet use, and imparting more advanced information skills.

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However, at the same time, the majority also perceived no net benefit in the acquisition of a formal teaching qualification. Participants placed low importance on the need to be formally educated in order to gain pedagogical knowledge and, given that not all were comfortable with their teaching role, or their ability to manage increased responsibility, the study identified a mismatch between recommendations in the literature and current practice.

In contrast, the majority of participants held an academic library/information qualification which has typically been linked to the formal acquisition of core, key information and library skills aligned to formal competency statements from relevant national and/or professional organisations. These qualifications had been obtained, on average, some ten years ago. Whilst subject librarians may have since updated LIS competencies through experiential – or even additional formal – learning, it is possible that a dichotomy exists between the value placed on previously current academic library/information qualifications and the experiential approach to acquiring pedagogical knowledge. However, if teaching responsibilities are only a part of their role, albeit one which is growing, it may not be surprising that many subject librarians do not yet perceive any immediacy to the need to add a formal education qualification to their existing set of formal competencies.

In relation to the importance placed upon the affect of service by Millennials, subject librarians identified themselves to be competent across a range of personal and interpersonal skills, viewing the relationship they had with Millennials to be a positive and productive one. Contact hours per week ranged from 7 to 9 on average and therefore the study concluded that subject librarians spend a substantial period of time working with, and supporting the learning of, Millennials. The use of Web 2.0 applications, such as social networking (e.g. Facebook, Twitter), to communicate with Millennials is growing but has not yet been fully embraced: the primary methods of communication between academic libraries and Millennials remain traditional (e.g. email, enquiry desk, pre-arranged appointments).

Nevertheless, despite these efforts the criticism of the affect of library service by Millennials in the study indicated a potential disconnect between academic libraries and Millennials which needs to be remedied.

Subject librarians also acknowledged the need to operate as learning technologists, and expressed self-described competency in supporting the provision of e-resources, undertaking web editing responsibilities, and providing general IT support to Millennials. Short courses in particular were highlighted as an appropriate, and appealing, means by which competency in these areas, coupled with acquiring an awareness of emerging technologies, knowledge of learning preferences, and skills to teach specialist ICT skills to Millennials, could be obtained. At the same time, they also acknowledged a need to more fully explore the use of Web 2.0 applications despite raising concerns about the impact of asynchronous methods of communication on personal, face-to-face, contact with Millennials. Concerns about the impact of technology extended to the Internet and Google Scholar, and in particular the pedagogical relevance and value of these resources.

7.2   Contributions and implications of the research

There are four key contributions which the study makes to the Library and Information Science (LIS) field. The first of these relates to the use of the online focus group as a methodological contribution; the second is the congruent approach undertaken by the study which pulled together three distinct strands of research (Millennials Generation, subject librarian roles and competencies, and service performance); the third is the development of models which represent the findings of this study and present a picture of the impact of Millennials on academic library services and the skills of subject librarians – these models have implications for LIS theory and practice as information professionals continue to consider more effective means of delivering successful academic library services; finally, the findings from the

study were used to produce reports to participating HEIs which directly informed and precipitated real improvements in service provision.

7.2.1 Implementing online focus groups

Although a pragmatic approach, and a triangulated mixed methodology, is relatively new to research practice, and as such the methodology of this study might be regarded as somewhat novel, they are not in themselves sufficiently significant to be considered as a key contribution of this study to the field. Nor, for the same reason, are the relatively standard web-based survey instrument designs. The study does make a contribution in methodological terms, however, through the design and deployment of an online focus group instrument in the context of an investigation in the LIS field. Although the concept is hardly a new one to research in fields such as Computer Science (e.g. Gaiser, 1997) or Business and Marketing (e.g. Clapper & Massey, 1996; Monolescu & Schifter, 2000), they remain a relatively untested method of investigation within LIS.

Although the nature of the data gathered from undertaking a focus group in an online setting arguably differs little from that gathered in a face-to-face setting (e.g. Underhill & Olmsted, 2003), there are several benefits to moderating discussion online which have been recognised by Business and Marketing researchers. These include reduced overheads, greater ease of implementation, and an ability to collect and analyse data more efficiently by making use of software to automate certain parts of the process. In the context of this study the online environment was particularly pertinent to Millennials given the high levels of use of, and access to, technology – a finding which emerged from the prior web survey. Meeting with Millennials in an environment with which they were familiar and which itself was of interest to the study, and, by its nature, helped overcome some of the limitations of face-to-face discussions (such as peer pressure), made the use of an online focus group instrument both relevant and appropriate.

The relative success of the online focus group discussions in methodological terms (in that valuable data were obtained), despite poor turnout which only mirrors the challenge faced by researchers who undertake focus groups in person, contributes some empirical evidence which might assist with better understanding the effectiveness of online qualitative research techniques in the LIS field. It should be noted, however, that not all topics in LIS research will necessarily identify relevance or appropriateness in the use of online focus groups.

7.2.2 Uniting key issues and themes

The study also contributes to the field by drawing together three distinct strands of research and presenting these in a cohesive and congruent manner focused on the topic of investigation. At the time the study began in 2005, research into the Millennials Generation – initially driven by the Management Sciences – had begun to permeate through into the LIS field primarily within North America. Between 2005 and 2011, UK LIS researchers also undertook investigations into the Millennials Generation (often referring to the peer group in a variety of ways be they Google Generation, Generation Y or Net-Generation) primarily in relation to the information-seeking behaviour of its members. This study married the two fields together by drawing together the generational traits and characteristics identified by the Management Sciences (and investigating these through fieldwork) and associating these with the picture painted by LIS of the information-seeking behaviour of Millennials. This resulted in a more holistic definition of Millennials and therefore, arguably, a more accurate understanding of their characteristics, outlook, expectations and behaviour.

With this definition in mind, the third strand – service performance, and an assessment of service quality – was explored with application to the outlook, behaviour and resultant expectations of Millennials. Whilst service quality is an established area of LIS research both in its own right (a study of

what quality is, and does) and in application to specific areas (such as geographical areas, types of library service, or specific cohorts of library users), at the time of the study there had been little follow-up investigation within LIS from acquiring an understanding of Millennials, to whether academic library services were in fact aligned to meet the expectations of this peer group in the UK.

The study adopted a LibQUAL+ inspired approach to assessing perceptions of service performance, benchmarking against expectations among Millennials in order to do so. Whilst findings obtained as a result are limited in their application, given the timeframe in which the investigation was undertaken, and whilst emphasis is on transferability rather than on forming generalisations, the study did successfully draw together these three strands of research. The picture which emerged from the study of academic library service provision in relation to the impact of the Millennials Generation is therefore more complete and – accordingly – more accurate, and contributes to an improved understanding within the LIS field.

7.2.3 Developing conceptual models

The picture of academic library service provision in relation to the impact of the Millennials Generation developed by this study is represented through the development of three distinct models.

The first of these (introduced in Chapter 6 as Figure 6.1) identified the influence of technology use in heightening and widening expectations among Millennials. This model is reproduced below, in Figure 7.1. Universal (that is, not necessarily specific to the academic library setting) technology use has shaped the attitude, outlook and behaviour of Millennials, which in turn has influenced the demands they place upon services, including academic libraries. In the quest to satisfy those demands, technology driven solutions

have been implemented and the use of those solutions has further effected change by continuing to shape attitude, outlook and behaviour, and so on.

The study found that technology use has given rise to a universal expectation of convenience and ease of access, requiring that academic libraries focus services more effectively on the delivery of resources at the point of need – whether that is within an online or offline environment – in order to accommodate diverse access methods and preferences. The application of IT within the academic library environment therefore remains a crucial issue and will continue to affect future service provision. The model of change developed from the findings of this study illustrates a continual heightening and widening of expectations precipitated by technology use, which will sustain pressure upon academic libraries to engage in a process of continual adaptation and improvement.
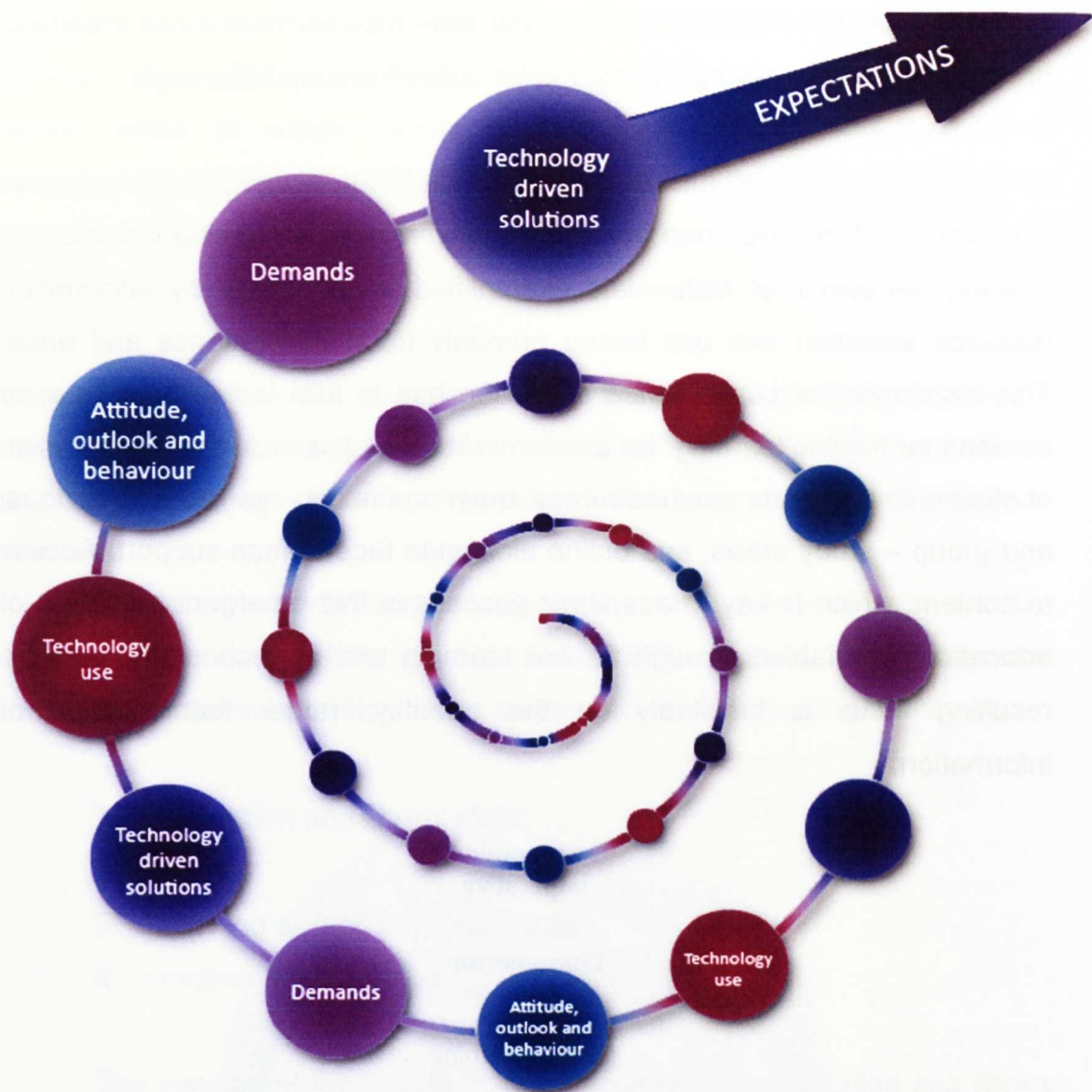
Figure 7.1. The influence of technology in shaping the expectations of Millennials (adapted from Halasz, 2007).

The second model developed from the findings of this study, introduced in Chapter 6 as Figure 6.2 and reproduced here in Figure 7.2, identified that the influence of technology in shaping the expectations of Millennials was symptomatic of a much deeper issue – one in which technology has profoundly altered the paradigm of education. Though the basic fundamental economic imperative of the paradigm remains the same – that education will lead to improved career prospects and that educated individuals will contribute to the economy – technology, and the improved

levels of access, convenience, ease and self-empowerment it has imparted, has fostered an increasingly consumerist outlook among Millennials.

At the heart of this is an expectation for academic success; an expectation which gives rise to the surface scanning, satisficing information-seeking behaviour of Millennials exemplified in the study by information resource selection and use based primarily upon convenience and ease. This insistence for convenience and ease has in turn led to an increased demand for flexible learning: for academic libraries this includes the provision of electronic alongside print resources, quiet and noisy – as well as individual and group – study areas, and online alongside face-to-face support. Access to content, which is key to academic success in this emergent paradigm of education, is enabled through flexible learning and by technology, and the resulting focus is inevitably on the quantity, rather than quality, of information.
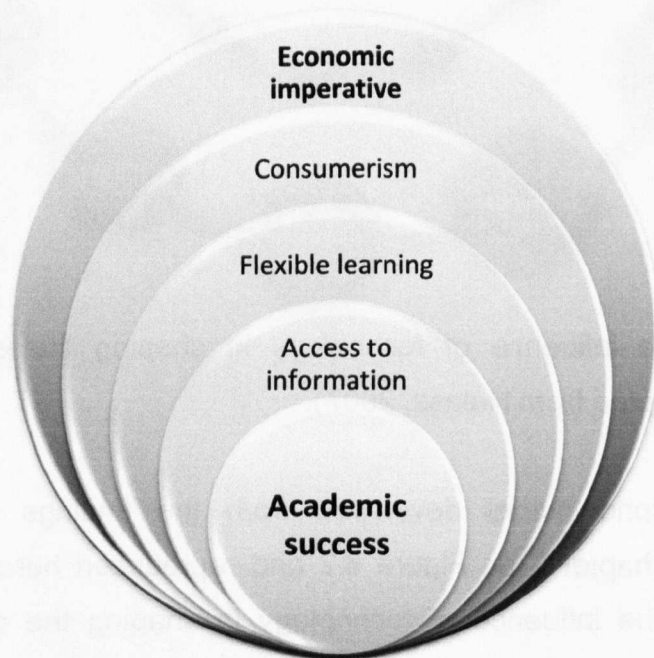
Figure 7.2. The emergent paradigm of education.

This emergent paradigm of education has contributed to a shift in the role and responsibilities of subject librarians from offering traditional subject-centred specialist support – such as the development of subject bibliographies and the provision of referencing and research support – to

providing increased learner-centred support, as contemporary learning advisors more heavily involved with teaching and learning activity, covering a wider variety of subject areas in a less specialised manner. These responsibilities are increasingly undertaken in more diverse settings (such as the VLE) with associated implications for developing the necessary competencies.

Four skillsets are now required by the subject librarian, in order to become a 'next generation blended librarian' equipped with the skills to support expectations placed upon academic library services by Millennials.

These are ordered sequentially, below, on the basis of when, in the evolution of the subject librarian role, a given skillset has become recognised as crucial for the subject librarian to satisfy demands placed upon the role:

1. Information and library skills;
2. IT skills;
3. Teaching and pedagogical skills;
4. Emotional intelligence.

The concept of the 'hybrid librarian', combining information and library skills with IT skills in a converged library service, became insufficient alone to meet increased responsibilities for providing learner support: the 'blended librarian' librarian combined these two skillsets with teaching skills and pedagogical knowledge in a model presented by Bell and Shank (2004). Although the concept of the blended librarian identified this change in responsibilities it failed to identify the full value of emotional intelligence; however, the present study found that the affect of the library service is as important to Millennials as the practical services it provides.

The 'next-generation blended librarian', represented by a model developed in this study, which was introduced in Chapter 6 as Figure 6.3 and is reproduced below as Figure 7.3, is one that combines emotional

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intelligence with the three, existing, recognised skillsets in order to more effectively engage with the Millennials Generation. As a learning technologist, combining essential IT skills with strong emotional intelligence, the subject librarian is more effectively positioned to engage with Millennials in their native, digital, landscape by making use of social networking and other forms of electronic communication to meet with Millennials at the point of need. As an educator, combining pedagogical knowledge with strong emotional intelligence, the subject librarian becomes well placed to identify, understand and appreciate the learning preferences and information-seeking behaviour of Millennials to more effectively provide learner support. The combination of these skillsets positions the subject librarian to deliver targeted, effective, outcome-based information and e-literacy instruction, and other forms of learner support, using virtual learning environments to satisfy the demand among Millennials for flexible learning in the digital landscape.
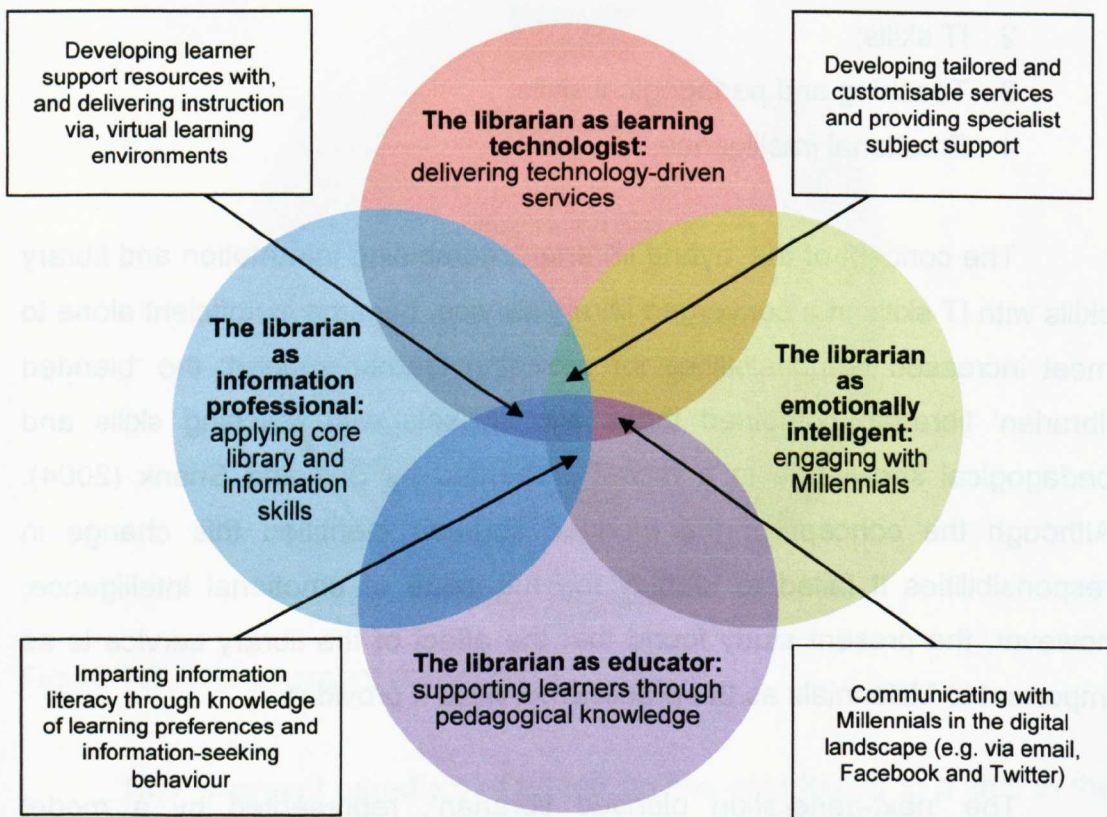
Figure 7.3. The next-generation blended librarian.

7.2.4 Informing service improvements

These models provide an improved conceptual understanding of the impact of technology, an emergent paradigm of education, and of the Millennials Generation generally, on academic library service provision and the skills required by subject librarians. However, the study also contributed practically to the improvement of services at participating HEIs. None of the four participating institutions had made use of the LibQUAL+ survey instrument previously. Reports on the findings of each strand of the investigation (a web survey of Millennials, online focus groups with Millennials, and a web survey of subject librarians) were produced and sent to each HEI that participated, at each stage of the investigation. The feedback contained within these products was in some cases used to inform real improvement to library service provision, and more generally provided the participating institutions with LibQUAL+ data without the associated costs of participating formally in a LibQUAL+ annual cohort.

Institution A responded, for example, by producing a 'results and action' booklet outlining the findings of the study and the steps taken by the library service to act upon feedback. These steps included a pilot to extend opening hours (to midnight) on four days each week during summer examinations – the pilot proved sufficiently popular that funding was subsequently allocated to continue with extended opening hours. A £1 million refurbishment project was also informed by the expectations of student participants in this study, resulting in the creation of five group and one large study rooms in addition to a large informal study area.

The library catalogue at Institution A was also enhanced with floor locations, and new signage and improved coloured floor plans – to match shelf colour coding – were introduced in response to the findings of this study. Finally, the library service recognised low levels of satisfaction with the provision and availability of reading list material, common to all four participating HEIs, and outlined the library's policy on purchases to increase

awareness and understanding of external limitations imposed upon the library.

Institution D also acted upon the report booklets by circulating these to senior library management staff and communicating findings with student library representatives. Institution D also maintained contact with the researcher throughout the study, beyond fieldwork and the provision of report booklets, and expressed an active interest in making use of this thesis to inform service delivery despite the length of time which has passed since fieldwork was undertaken. The study has therefore contributed in real terms, over a period of time, to the improvement of academic library service provision at the participating institutions.

7.3 Recommendations

In line with the pragmatic approach taken, the findings of this study do not claim to offer a basis for generalising across the sector as a whole, but may be transferable, wholly or partly, to a substantial number of institutions. Whilst findings are not generalisable, they are also nevertheless of value and generally applicable across the institutions which participated in the study. From these findings several recommendations emerge, either for library service managers or subject librarians, or both.

7.3.1 Implement regular, standardised, service performance assessment

Findings highlighted deficiencies in a number of service areas across the four participating HEIs, which may well be true of other institutions, with only one academic library service having succeeded – at the time of the investigation – in meeting the minimum expectations of Millennials. Least successful services included the provision of refreshment facilities, reading

list materials, and computing facilities. In all three cases both quantity and quality were reportedly lower than expected by the Millennials who participated. The length of time which has subsequently passed since the investigations of this study may mean that these deficiencies have been addressed in the interim. The study also highlighted areas of satisfactory performance across participating HEIs, including in the provision of self-service terminals, induction and library training, and audio-visual equipment. Assessing service performance is essential not only for identifying areas of weakness but also areas of strength, to enable library service managers to more effectively target resources towards ensuring overall performance is meeting the expectations of service users.

The use of standardised instruments across the sector would also expand the potential for benchmarking performance against comparable institutions and, perhaps more importantly, also enable academic libraries to identify and share best practice. Through an acquired understanding of user expectations – whether limited, as in the case of this study, to Millennials, or across all age ranges – library service managers would be placed to share the knowledge of those expectations across the sector. This would enable academic libraries to work together to anticipate change and development rather than function in an isolated silo-based environment in which service delivery is developed in a reactionary fashion to changing demands on the ground. Some UK academic libraries are already engaged in this practice – a consortium of SCONUL member libraries have made use of LibQUAL+ since 2003 to obtain UK Higher Education average scores across a range of questions (SCONUL, 2008). This practice should be embraced across the sector; given that a modified version of the LibQUAL+ instrument – LibQUAL+ Lite – was piloted during 2008 reducing response times for participants (Thompson et al., 2009), the practicability of deploying a standard instrument to measure performance is therefore increasingly apparent.

The first recommendation of this study is therefore the implementation of a regular programme of the assessment of service quality and provision in a way which compares perceived performance levels against user expectations, and which enables benchmarking of performance against comparable institutions and, in doing so, facilitates the sharing of best-practice. Making use of the LibQUAL+ or LibQUAL+ Lite standardised measurement instruments, or similar, would enable expectations to be identified, performance to be accurately measured against those expectations, and deficiencies and strengths to be identified. Library service managers would then be better placed to target resources more effectively to address areas for improvement, and to anticipate necessary development to service delivery. An annual assessment routine would be a reasonable frequency by which this could be accomplished and for those institutions which do make use of LibQUAL+ in the UK this frequency tends to be typical.

7.3.2 Embed convenience and ease of use in service delivery

The overriding factors which determine resource selection and use among members of the Millennials Generation, across all four HEIs, are convenience and ease of use. Consequently the study found that university-supplied resources may not always be the first choice among Millennials. Millennials are evidently aware of the limitations of less credible and authoritative sources of information but these are not their key concerns. Academic libraries are therefore advised to expend less effort on disparagement of the Internet and more on extolling the virtues – particularly and obviously the convenience and ease of use – of existing, university-supplied, services. If academic library services seek to attract, engage and maximise use of services among Millennials, it is also essential that both convenience and ease of use are embedded within any service development plans. Library service managers should, for example, appreciate the impact of convenience and ease of use in every aspect of service delivery when looking at development or change, from the procurement of library management systems (LMS), which face competition from *Google* and

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Google Scholar, to access arrangements which reflect a demand among Millennials for 24/7 service and both physical and virtual forms of service delivery. One institution which participated in the study (Institution A) subsequently acted upon the findings of this study by extending opening hours to meet demand during peak periods such as examinations, as well as enhancing signage and adding functionality to the library OPAC to improve ease of use. These improvements could be adopted elsewhere to address the demand for convenience and ease of use which was evident among Millennials in the study.

The second recommendation of this study is therefore that library service managers embed convenience and ease of use in service delivery whether through promoting existing services to Millennials on the basis of these attributes or during the development of services. Key among the possibilities for doing so is the implementation of web-scale discovery services to provide Millennials with a single, familiar, Google-style search tool to direct them to quality – authoritative – content. Web-scale discovery tools are "capable of searching quickly and seamlessly across a vast range of local and remote preharvested and indexed content, providing relevancy-ranked results in an intuitive interface expected by today's information seekers" (Vaughan, 2011:32). *Ebsco, Primo Central, Summon,* and *WorldCat Local* make use of web-scale discovery functionality to draw together all types of content whether in print or electronic format, held locally or remotely, offering users a Google-like search and discovery experience.

There are pedagogical and resource implications for implementing web-scale discovery services, however, and these must be considered by library service managers. From a pedagogical perspective, web-scale delivery services are presented as a solution to the difficulties experienced by, and asserted by, students attempting to locate library resources such as journal articles. A potential risk is that efforts to impart information/e-literacy skills to students could be neglected as a result and that the focus might remain on skills required to access collections rather than necessary

research and information skills which Millennials are characterised as lacking (e.g. CIBER, 2008; Heinström, 2005; Hepworth, 2000; Holiday & Li, 2004; Hutchings, 2008; Reisz, 2008). There are also potential costs for implementing web-scale discovery services, possibly including a need to develop an institutional repository – where one does not already exist – as a necessary foundation.

Given that Millennials place such weight on convenience and ease of use, web-scale discovery services appear an obvious and valuable means by which this peer group could be attracted to making use of library services. Any implementation of web-scale discovery should, however, demonstrate an awareness of the need for imparting quality information/e-literacy skills in tandem.

7.3.3 Develop the library's social role

The question of how academic library services might engage with Millennials has typically focused on the use of Web 2.0 technologies in relation to methods of communication in the digital landscape. Whilst uptake in the use of social networking tools by academic libraries appears to be slow – though it is important to repeat the caveat that findings in the study stem from the collection of data which may no longer be current given that the participating HEIs in this study have since made some moves towards engaging with users via social networking – Millennials are looking beyond the question of lines of communication.

Findings from the study identified a perception among Millennials of the potential for academic libraries to enhance their role to one which is both social and extends beyond support for scholarly activities alone; for example, the development of fiction and DVD collections for entertainment, and the use of the physical library space for social events. This mirrors the emphasis

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placed among Millennials on the provision of refreshment facilities, extended opening hours, and comfort, which are themselves not typically regarded as fundamental elements of an academic library service. In essence, Millennials view the academic library as a potential venue for supporting and satisfying non-scholarly activities, though it is unclear if this is in a way totally distinct from academic endeavour or complementary to it. A social role for the academic library service has been neglected in the Commons model (whether an information commons or learning commons) which typically focuses on the organisation of resources as aligned to scholarly activity and learning outcomes.

The third recommendation of this study is that library service managers consider means of enhancing the role of the library by developing collections or hosting events designed to satisfy interest in non-scholarly, leisure, activities. Hong Kong University Libraries, for example, hosts monthly talks for members of its Reading Club. In tandem with this, service managers should also consider means by which the library can play an increased social role – either through hosting or organising events, perhaps in association with students unions or other institutional associations. Naturally there are resource implications, not least of all the availability of space and staff, and clearly the demands from Millennials need to be weighed against these. Social activities will ultimately promote readership levels among Millennials and serve as a gateway for increased use of the academic library by this peer group.

7.3.4 Engage in lifelong learning

The study developed a model for the 'next-generation blended librarian' in which core information and library skills are integrated with IT skills, formal pedagogical knowledge and emotional intelligence. Existing skillsets evidenced low levels of formal skill acquisition in terms of pedagogical knowledge with a contrast between an increased teaching role described by participants on the one hand, and experiential skill acquisition for undertaking that increased role on the other. Though some subject librarians engaged in learner support, who are now managing increased teaching responsibilities, do hold formal qualifications these seemed undervalued on the whole. A PGCE or PGCHE, or any other form of formal qualification, would not only position a subject librarian to more effectively engage with increased teaching responsibilities but, more importantly, also impart some understanding of learning preferences which would then be of assistance with appreciating the information-seeking behaviour of Millennials. This in turn would enable subject librarians to consider such behaviour when developing and delivering services to Millennials, particularly in relation to information/e-literacy instruction.

The need for subject librarians to acknowledge and engage in the continuous development of IT skills, in order to engage with emerging technologies and therefore digital native Millennials, is also essential. As student expectations widen and heighten from the use of technology, subject librarians must naturally be positioned to satisfy the resulting demands on service provision. By engaging with a process of continual skill development, subject librarians might then be placed to move from a reactionary approach towards anticipating the impact of emerging technologies on academic library services.

Finally, the importance of emotional intelligence must be recognised in the specific context of Millennials and remote service delivery. The study found that affect of the academic library service was as important to Millennials as the functional services it offered. Personal and interpersonal

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skill development should recognise the need to engage with users not only in a traditional face-to-face setting but also remotely; from virtual learning environments (VLEs) to social networking sites, blogs, wikis and other forms of asynchronous communication, as well as synchronous methods of communication such as instant messaging. Providing learner support in such environments requires an extension of the generic fundamentals of customer service to an appreciation of how best to support individuals in environments which lack many of the usual cues, such as body language, from which face-to-face communication benefits, as well as to an understanding of how to impart information in remote settings effectively. Collaboration, negotiation, and project management skills are also increasingly important for subject librarians in order to work with IT professionals, academic colleagues, or external third parties in the development and support of technology-driven services geared to meeting the expectations of Millennials.

The fourth recommendation of this study is that subject librarians be encouraged by library service managers more thoroughly, persistently, and effectively to engage in a process of 'lifelong learning' which recognises the value of undertaking a process of continual skill assessment and improvement. Engaging more extensively in CPD would equip subject librarians with the necessary skills to enable them to move academic library services from a position of reacting to change, and to heightening and widening expectations, towards a fuller appreciation of the preferences and information-seeking behaviour of library users and ultimately to anticipating change in advance.

This is by no means a novel concept – CPD and lifelong learning are an inherent professional responsibility (CILIP, 2011a) and in this sense the recommendation is nothing new. However, the evidence from this study suggests that not all subject librarians currently engage in this process in a sufficiently comprehensive and/or consistent manner and it is on this basis that the recommendation is made. CILIP currently operates a voluntary revalidation scheme within which information professionals may formally

demonstrate commitment to, and evidence of, CPD, every three years (CILIP, 2011b; Corrall, 2011). A mandatory CPD scheme was intended to be implemented in January 2011, emphasising the value placed on CPD by CILIP. This triennial frequency would be a recommended target timeframe against which subject librarians, and their library service manager leads, might measure their own professional development.

Augmenting existing, core, information skills, by obtaining a formal teaching qualification and undertaking a periodic review of IT skills and knowledge which then seeks to address any gap in knowledge, or any deficit in currency or awareness of emerging technologies, should make use of whichever means are appropriate – from the more conventional CPD-based activities such as attendance at short courses, to more contemporary methods which recognise the value and merit of experiential work-place based learning and mentoring.

7.4   Reflections on methodology

The study made use of a multilevel mixed methodology, in which both qualitative and quantitative methods were utilised as part of a pragmatic approach to undertaking research. The researcher collected data from undergraduate students, aged 18-24, and from subject librarians, at four HEIs in England. Sampling from the population in each instance was also undertaken using a multilevel mixed methods technique. Deductive web-based surveys were designed to collect primarily quantitative data from Millennials and subject librarians at the four HEIs, and a series of inductive synchronous online focus groups were conducted with Millennials to collect qualitative data. The survey of Millennials adapted elements of the LibQUAL+ survey instrument in order to effectively establish expectations and perceived service performance in line with established practice.

A pragmatic approach was favoured because it freed the researcher from the limitations of philosophical commitment to static paradigms proscribing against undertaking research in certain ways, and instead enabled the researcher to focus upon the substantive questions of how to collect and analyse data targeted at answering the research questions and addressing the research objectives. For example, the pragmatic approach benefited from mixing qualitative and quantitative methods in an iterative approach to collect data which could then be used to substantiate emerging theories and inform the next stages of the investigation. The deductive web survey of subject librarians and inductive question structure for online focus groups with Millennials were both informed by findings emerging from the initial deductive web survey of Millennials, for example. The research also benefited from the use of a mixed methodology by mitigating the respective limitations of qualitative and quantitative methods, and the researcher was able to creatively identify connections between quantitative and qualitative data during analysis.

There were a number of challenges faced by the researcher associated with the methods and methodology employed in the investigation. The first of these related to the mixed methods approach and involved the interpretation of datasets of substantially different natures: this required that the researcher acquire an understanding of how to design both quantitative and qualitative research instruments, collect data of both types, and subsequently analyse that data using distinct frameworks. Triangulating data in the mixed methodology also required that the researcher put lengthy consideration into how to marry together qualitative and quantitative data as part of a sequential mixed methods data analysis technique. Not only did this increase the complexity of data collection and data analysis, but it consequently required that the researcher spend more time on data analysis than would perhaps have been necessary when handling only one type of data.

To overcome this challenge the researcher identified the associated risks and planned accordingly: a project plan was developed from the outset and sufficient time was invested in the development of the methodology framework before fieldwork was undertaken. Data analysis tools and software were also identified early on, and each instrument design was piloted to ensure both integrity during delivery – by minimising or overcoming threats (such as those of instrumentation and test) – and a relevant and clear dataset could be obtained during collection, for analysis. For example, the survey software used enabled the export of data directly in to *Microsoft Excel* for analysis, and the online focus group software enabled the export of transcripts electronically for line numbering, and subsequent thematic content analysis. The survey of Millennials also adapted elements from the LibQUAL+ instrument and made use of analysis techniques in respect of assessing service performance where those techniques have already been proven and have been an accepted established practice.

Another challenge related to the development of a relatively untested method of investigation in this field: the online focus group. An approach to undertaking focus groups in an online environment through synchronous discussion carries with it a number of obstacles, including – technical troubleshooting issues besides – the need to accept and manage lengthier discussion times associated with participants needing to type their responses. Conversation can be non-linear as a result, with responses occurring out of sequence as the discussion moves forward whilst a participant is still responding to an earlier point. Likewise, the complexity and quantity of dialogue – which often contains more numerous but shorter responses, often in shorthand which may prove difficult to translate – can lead to difficulties during the production of transcripts and of subsequent data analysis.

The use of online focus groups in the LIS field is also relatively untested and consequently the body of knowledge, from which the researcher could draw upon recommendations and best practice to guide the instrument design, deployment, data collection and data analysis, was small.

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The researcher had to overcome this challenge by relying upon literature from outside the LIS field (primarily within Computer Science), and through designing 'safeguards' into the instrument to mitigate the difficulties described above: a customisable online chat tool was used which the researcher could adapt for the specific purposes of this study, an enhanced moderator role was accepted and identified in the planning stage, and a topic guide for discussion was established to keep discussion on track; participants were encouraged to continue responding to points raised during the conversation even if the discussion had moved forward to ensure that quality data were obtained without the medium interfering. The chosen software also enabled the researcher to export an electronic transcript which addressed difficulties with transcribing discussions during analysis (allowing import into different software for line numbering, thematic content analysis and comparison to other transcripts).

The difficulty of undertaking the study over a lengthy period of time, due to the researcher's personal circumstances and a transition to part-time research, had an impact on the development of the literature review and the resultant relevance of findings from fieldwork. As the literature review was integral to the study, in order to develop the contextual framework which would then inform subsequent fieldwork and research instrument designs, it was essential to consistently revisit the literature to ensure currency.

A review of literature was therefore undertaken throughout the study, albeit at less intensity than in the initial development stage. This was a non-trivial task given the scope of the investigation. For the same reasons, the findings of the study are valuable insofar as they provide a snapshot of contextual detail about four UK HEIs at the particular time in which fieldwork was undertaken but the length of time which has passed between that fieldwork and the conclusion of the study renders any attempt to make generalisations from findings moot.

Nevertheless, this was never the intent of the study in the first instance. The pragmatic approach underpinning the methodology of the study was intentionally geared towards the transferability of findings. This approach recognised that findings would neither be so unique or limited in scope so as to be irrelevant to any other context nor sufficiently general for application in any circumstance. As such, the duration of the study should be regarded as less of a threat to the validity and reliability of findings as it might otherwise have been had the methodology been based upon a more rigid metaphysical research paradigm.

7.5 Limitations and suggestions for future research

The limitations of the scope of study are outlined in more detail in this section of the chapter, with some consideration for future research which might be pursued either to remedy those limitations or with the objective of consolidating and building upon the findings which have been presented.

Within the limitations of the research methodology as described within Chapter 3, this study provided empirical evidence substantiating the characteristics of the Millennials Generation, and their expectations and perceptions of library service performance, in tandem with competencies of subject librarians. Consequently the study improved understanding about how Millennials are characterised, how they are served by academic libraries and library staff, and what the changing demands upon the skills of information professionals are.

The scope of the study limits the ability to generalise from findings: investigations were limited to a particular (small) group of UK HEIs, at a specific point in time. The pragmatic approach undertaken advocates transferability rather than generalisations, however, and as such findings should neither be regarded as so unique they are irrelevant beyond the context of this study, nor so general that they can be applied to any

circumstance. Firstly, although half of the participating HEIs were selected from pre-1992 universities and the other half from post-1992 universities, no comparisons were made during data analysis on the basis of this attribute. The reasons for this are two-fold: firstly, the scope of the study was limited to characterising Millennials, understanding how Millennials are currently served by academic libraries and library staff, and identifying any changing demands placed upon the role and skills of subject librarians. A comparison between pre-1992 and post-1992 institutions was, in other words, superfluous to the core purpose of the investigation.

Secondly, the sampling strategy used to select HEIs was designed to enhance the transferability of findings by recognising that post-1992 universities typically focus primarily upon teaching and pre-1992 universities on research, which consequently shapes the facilities, services and learner support on offer to students. Selecting an even mix of pre-1992 and post-1992 institutions was therefore primarily a means of achieving greater transferability in findings. Findings may be more representative than they would otherwise have been had the sample of HEIs been purely from one group or another, but nevertheless the richness of data lacks a potentially useful comparison between pre-1992 and post-1992 universities. For example, post-1992 universities – with a focus primarily upon teaching – may well have been usefully compared against pre-1992 universities whose focus is typically on research – in terms of the pedagogical knowledge and teaching responsibilities of subject librarians to identify whether information professionals in post-1992 universities undertake greater teaching roles than those in pre-1992 universities, or vice versa. A comparison of service performance in terms of adequacy and superiority between pre-1992 and post-1992 universities in the context of this study could also have yielded some valuable results. The data collected by this study present the opportunity for this comparison to be made in the limited context of the four participating HEIs, and could be used to inform more in-depth explorations in this area with future research.

The current study explored the characteristics, and expectations of, a specific cohort of Millennials: those aged 18-24 (at the highest age range of the peer group) in line with the generational location of this peer group as described within the literature (that is, those born from 1981 onwards), within higher education. Consequently there are a number of limitations which arise: disparity in expectations of academic service provision between undergraduates and postgraduates were not accounted for in the scope of the study; disparity in expectations between specific year groups of undergraduates were not accounted for (for example, between first year and final year students); expectations of younger Millennials in earlier stages of education were not considered in context; and, finally, no comparison with 18-24 year old undergraduates from previous generations were made. As a result, transferability is limited.

There exists great potential for a correlation – specifically longitudinal – study to be undertaken which examines the characteristics of Millennials, and their expectations and information-seeking behaviour, across a span of time to identify whether the characteristics described in the literature and in this study are specific to generation or whether they are in fact specific to age, or perhaps level of study. A longitudinal study would also demonstrate the development of expectations over time, and may provide a more accurate picture of causality – that is, identifying the triggers which lead to emerging expectations. A comparison between Millennials in higher education and those outside higher education might also prove useful for determining whether the characteristics outlined in this study apply on a generational level or if they are limited to a specific cohort – in this case, undergraduates in higher education.

The study precluded any in-depth investigation into the nature of information-seeking behaviour – and therefore information/e-literacy – among Millennials. Although resource selection and use were explored in a limited context the scope of the study did not extend to acquiring empirical evidence which could identify definitively either the learning preferences of Millennials or their information-seeking behaviour. More intensive, targeted,

investigations into the information-seeking behaviour of Millennials in UK HEIs, of the sort undertaken by CIBER, which also account for the generational traits and characteristics of this peer group, would provide a useful insight and valuable comparison with data obtained in this study regarding convenience and ease of use as primary considerations among Millennials, and with data obtained in relation to correlations between scholarly activity and high levels of Internet use.

There are also areas of further exploration which would provide a more holistic insight into Millennials and their impact on academic library service provision, distinct from the limited scope of this study. For example, emerging from the findings of this study were two key issues: the first, an emerging paradigm of education shaped by the influence of technology; and the second, the potential for academic libraries to step into a social role with associated implications for collection development and library space planning. The findings of this study identified an underlying change in the paradigm of education precipitated by technology; however, this was quite evidently beyond the scope and resources of this study whose context was limited to the impact of the Millennials Generation upon academic library services.

The literature review of this study was focused upon the LIS field and the scope of the study precluded any comparison with existing research which may have been undertaken in this area. The field of Education may well have already identified and more accurately described an emergent paradigm of education but the findings of this study might present an opportunity for cross-discipline research between LIS and Education into the nature of this paradigm and the implications for learner support within academic libraries. Exploring issues of library space planning were also beyond the scope of this study though findings identified the importance of library space to Millennials, the possibility of extending collections beyond scholarly support, and the potential for academic libraries to embrace an increased social role in the student lives of Millennials. Future research could

explore these areas, perhaps in relation to how the Commons model of service delivery might serve the Millennials Generation, and what an increased social role for the library might look like and what implications there may be for information professionals.

A final word

This final chapter provides the conclusion of an investigation into the impact of the Millennials Generation upon academic library services and the skills of subject librarians. The research made use of qualitative and quantitative research techniques in a mixed methods pragmatic approach. Three models were developed which illustrated the spiral of heightening and widening student expectations driven by technology use, an emergent paradigm of education which has been shaped by technology and the combination of four key skillsets which will position subject librarians as next-generation blended librarians able to provide effective learner support to Millennials.

This knowledge may prove useful for library service managers when considering how best to develop academic library services to meet the needs of today's generation of undergraduate students, as well as subject librarians who wish to acquire the necessary skills and competencies to support those services. The findings of this study are limited in scope and future research is needed to explore some of the remaining, unresolved, questions about the impact of Millennials on library service provision or the wider question of the paradigm of education.

To conclude, this study achieved its research aims and objectives by presenting a congruent picture of the Millennials Generation – its characteristics, traits, information-seeking behaviour and expectations – and by exploring the impact of Millennials upon academic library service provision. This was accomplished by assessing the service performance of a

sample of academic library services in UK HEIs against the expectations of Millennials, and through an evaluation of the resulting and changing demands upon subject librarians and the implications of these for skill and competency requirements. The resulting information may have practical implications for library service managers and subject librarians wishing to align service provision to the needs of today's undergraduate students and to educators who may wish to explore more fully the impact of technology upon pedagogical practice and the paradigm of education.

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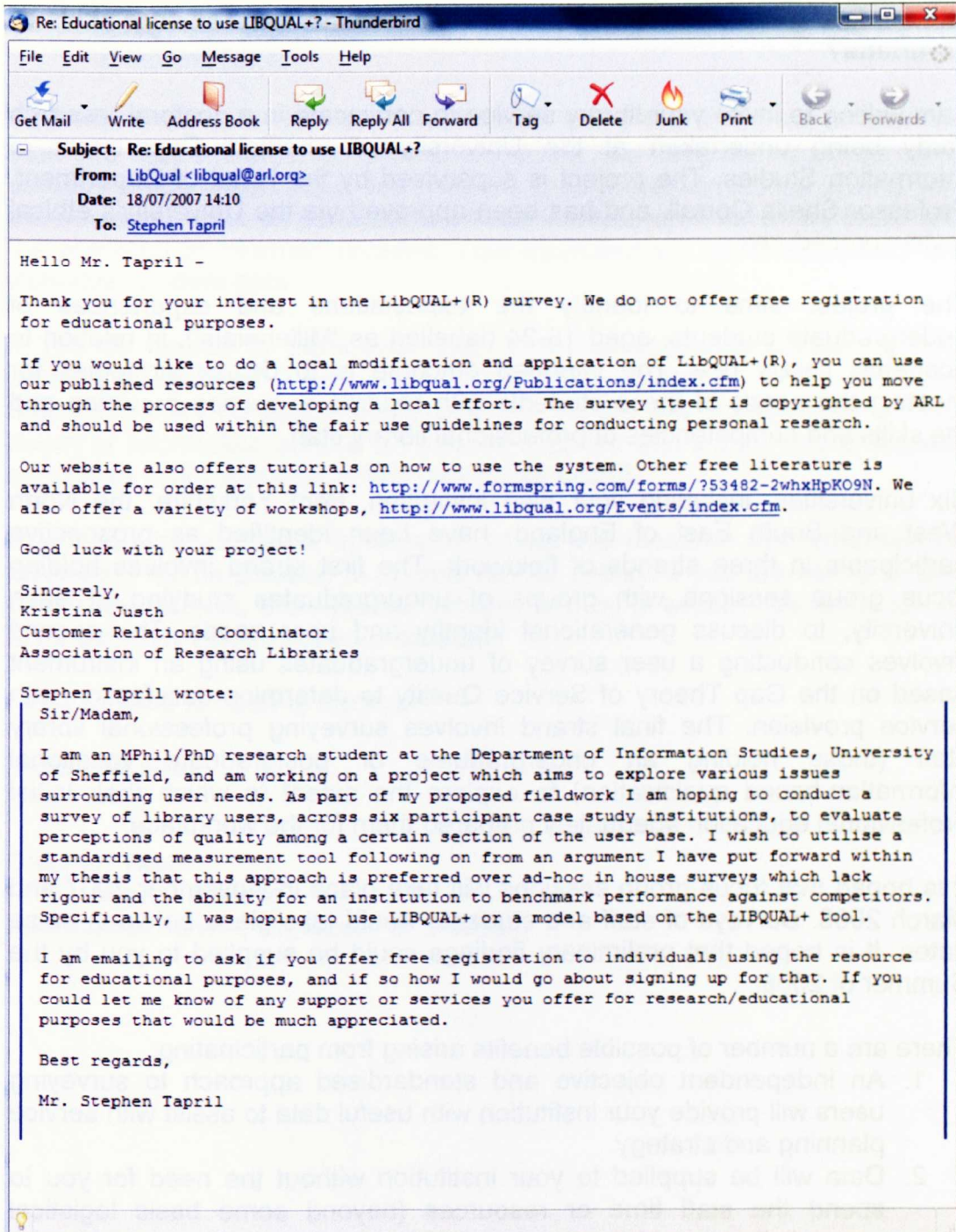
Appendix A – Literature review keywords and search terms

Table A.1. Literature review keywords and search terms.

Core	Contextual

■ **Generational theory/cultural or social identity**
  ‣ Millennial(s)
  ‣ Post-modern student
  ‣ Baby boom(ers)
  ‣ Generation X
  ‣ Silent Generation
  ‣ GI Generation
	■ **Learning preferences**
	  ‣ Information literacy
	  ‣ E-literacy
	  ‣ ICT literacy
	  ‣ Search strategies
	  ‣ Information seeking behaviour
	  ‣ User behaviour
	  ‣ Video-gaming +/- literacy

■ **User needs**
  ‣ Usability/needs testing
  ‣ Accessibility
  ‣ Distance learning
  ‣ Service needs
  ‣ Learning needs
  ‣ Information needs
	■ **Self-identity/online identity**
	  ‣ Avatar
	  ‣ BBS
	  ‣ Online forums
	  ‣ Online communities

■ **Core skills**
  ‣ ICT +/- ICT proficiency
  ‣ Library skills / information skills
  ‣ Skills Gap
	■ Plus the clarification of the terms 'Reader' vs. 'User' for the purposes of illustrating generational change among those using libraries and those providing library services

■ **Service performance**
  ‣ Strategic planning
  ‣ Service remit
  ‣ Service standards
  ‣ Consultation with users
  ‣ Service performance
  ‣ Quality
  ‣ Expectations
  ‣ Measurement
  ‣ SERVQUAL / LIBQUAL+	

■ **Environment** ‣ Library space/design	

Appendix B – Correspondence

B.1   Fair use approval from the Association of Research Libraries (ARL)

Re: Educational license to use LIBQUAL+? - Thunderbird

File   Edit   View   Go   Message   Tools   Help

Get Mail | Write | Address Book | Reply | Reply All | Forward | Tag | Delete | Junk | Print | Back | Forwards

Subject: **Re: Educational license to use LIBQUAL+?**
From: LibQual <libqual@arl.org>
Date: 18/07/2007 14:10
To: Stephen Tapril

Hello Mr. Tapril -

Thank you for your interest in the LibQUAL+(R) survey. We do not offer free registration for educational purposes.

If you would like to do a local modification and application of LibQUAL+(R), you can use our published resources (http://www.libqual.org/Publications/index.cfm) to help you move through the process of developing a local effort. The survey itself is copyrighted by ARL and should be used within the fair use guidelines for conducting personal research.

Our website also offers tutorials on how to use the system. Other free literature is available for order at this link: http://www.formspring.com/forms/?53482-2whxHpKO9N. We also offer a variety of workshops, http://www.libqual.org/Events/index.cfm.

Good luck with your project!

Sincerely,
Kristina Justh
Customer Relations Coordinator
Association of Research Libraries

Stephen Tapril wrote:
> Sir/Madam,
>
> I am an MPhil/PhD research student at the Department of Information Studies, University
> of Sheffield, and am working on a project which aims to explore various issues
> surrounding user needs. As part of my proposed fieldwork I am hoping to conduct a
> survey of library users, across six participant case study institutions, to evaluate
> perceptions of quality among a certain section of the user base. I wish to utilise a
> standardised measurement tool following on from an argument I have put forward within
> my thesis that this approach is preferred over ad-hoc in house surveys which lack
> rigour and the ability for an institution to benchmark performance against competitors.
> Specifically, I was hoping to use LIBQUAL+ or a model based on the LIBQUAL+ tool.
>
> I am emailing to ask if you offer free registration to individuals using the resource
> for educational purposes, and if so how I would go about signing up for that. If you
> could let me know of any support or services you offer for research/educational
> purposes that would be much appreciated.
>
> Best regards,
>
> Mr. Stephen Tapril

B.2 Invitation to heads of library services

Dear

What impact will the expectations and experiences of the so-called 'Millennials' generation have upon library services and the core skills of librarians?

I am writing to invite your library service to participate in a doctoral research study being undertaken at the University of Sheffield Department of Information Studies. The project is supervised by the Head of Department, Professor Sheila Corrall, and has been approved via the University's ethical review procedures.

The project aims to identify the expectations and experiences of undergraduate students, aged 18-24 (labelled as 'Millennials'), in relation to academic library use. The intended outcome is to devise strategies for meeting the needs of these students with regards to service provision and the skills and competencies of professional library staff.

Six universities, including your own institution, from Yorkshire, the North West and South East of England, have been identified as prospective participants in three strands of fieldwork. The first strand involves holding focus group sessions with groups of undergraduates studying at each university, to discuss generational identity and user needs. The second involves conducting a user survey of undergraduates using an instrument based on the Gap Theory of Service Quality to determine satisfaction with service provision. The final strand involves surveying professional library staff (those holding an undergraduate or postgraduate vocational information-based qualification) to explore the extent to which their initial professional education adequately prepared them for the workplace.

It is hoped that focus group sessions will take place in November 2007 and March 2008. Surveys of staff and students would take place between these dates. It is hoped that preliminary findings could be supplied to you by the Summer of 2008.

There are a number of possible benefits arising from participating:
1. An independent objective and standardised approach to surveying users will provide your institution with useful data to assist with service planning and strategy.
2. Data will be supplied to your institution without the need for you to spend the staff time or resources (beyond some basic logistical support) that would be necessary if conducting such an exercise in-house.
3. The project offers an opportunity to demonstrate to your users a willingness to take their views into account.

There are a few areas where logistical support will be required if you decided to take part:

1. Obtaining institutional consent, if required (e.g. from central university authorities).
2. Provision of a room, preferably in or near the library, where focus group sessions can be held.
3. Advertising of focus group sessions, the undergraduate student survey and library staff survey by way of supplied posters and the use of mailing list(s).

Your institution does not have to participate and if you do decide to take part then you may withdraw consent at any point. We have devised a sampling strategy which ensures that there are no Data Protection issues arising from the research, since all participants will be involved on a voluntary basis with the provision of informed consent. Your institution will not be asked for any individual student data.

If you do decide to participate then a written response confirming your consent is required. Your institution will not be identified in the published findings, but will be guaranteed anonymity, via the use of pseudonyms. Your library or information service will also be supplied with a summary of findings specific to your institution, which may prove useful.

If you require additional information about the research and what will be involved, I will be pleased to provide further details. If you are willing to take part in the project, then please indicate this by a written response to this letter explicitly confirming your consent.

I look forward to hearing from you.

Yours sincerely

Stephen Tapril
PhD research student
Information School, University of Sheffield

Appendix C – Web-based survey of Millennials

Millennials Generation Survey 2007

The
University
Of
Sheffield.

University of Sheffield, Department of Information Studies

An investigation into the impact of the Millennials Generation on library services

Respondent information

* A: How old are you?

Please write your answer here:

* B: At which university do you study?

Please write your answer here:

* C: By ticking this box you acknowledge that you have understood the purpose of this survey and consent to taking part

Please choose *all* that apply:

☐ I confirm and agree

1. Resource use

* 1: How frequently do you use the following resources?

	Daily	Weekly	Monthly	Quarterly	Less than quarterly	Never Used
E-Books	☐	☐	☐	☐	☐	☐
E-Journals (i.e. specific journal titles in electronic form)	☐	☐	☐	☐	☐	☐
Electronic databases (e.g. EBSCO, Science Direct)	☐	☐	☐	☐	☐	☐
Google Scholar	☐	☐	☐	☐	☐	☐
Library catalogue	☐	☐	☐	☐	☐	☐
Printed material (e.g. books, journals, newspapers)	☐	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐	☐
Subject-based gateways (e.g. INTUTE, SOSIG)	☐	☐	☐	☐	☐	☐
Virtual learning environment (e.g. Blackboard, WebCT)	☐	☐	☐	☐	☐	☐
Wikipedia	☐	☐	☐	☐	☐	☐

* 2: To what extent do you find the following resources easy to use?

	4 - Easy	3	2	1 - Difficult	Never Used
E-Books	☐	☐	☐	☐	☐
E-Journals (i.e. specific journal titles in electronic form)	☐	☐	☐	☐	☐
Electronic databases (e.g. EBSCO, Science Direct)	☐	☐	☐	☐	☐
Google Scholar	☐	☐	☐	☐	☐
Library catalogue	☐	☐	☐	☐	☐
Printed material (e.g. books, journals, newspapers)	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐
Subject-based gateways (e.g. INTUTE, SOSIG)	☐	☐	☐	☐	☐
Virtual learning environment (e.g. Blackboard, WebCT)	☐	☐	☐	☐	☐
Wikipedia	☐	☐	☐	☐	☐

* 3: To what extent do you find the following resources valuable?

	4 – Highly valuable	3	2	1 – Not at all valuable	Never Used
E-Books	☐	☐	☐	☐	☐
E-Journals (i.e. specific journal titles in electronic form)	☐	☐	☐	☐	☐
Electronic databases (e.g. EBSCO, Science Direct)	☐	☐	☐	☐	☐
Google Scholar	☐	☐	☐	☐	☐
Library catalogue	☐	☐	☐	☐	☐
Printed material (e.g. books, journals, newspapers)	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐
Subject-based gateways (e.g. INTUTE, SOSIG)	☐	☐	☐	☐	☐
Virtual learning environment (e.g. Blackboard, WebCT)	☐	☐	☐	☐	☐
Wikipedia	☐	☐	☐	☐	☐

* 4: To what extent do you feel you can rely on the information from these resources to be correct?

	4 - Always	3	2	1 - Never	Never Used
E-Books	☐	☐	☐	☐	☐
E-Journals (i.e. specific journal titles in electronic form)	☐	☐	☐	☐	☐
Electronic databases (e.g. EBSCO, Science Direct)	☐	☐	☐	☐	☐
Google Scholar	☐	☐	☐	☐	☐
Library catalogue	☐	☐	☐	☐	☐
Printed material (e.g. books, journals, newspapers)	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐
Subject-based gateways (e.g. INTUTE, SOSIG)	☐	☐	☐	☐	☐
Virtual learning environment (e.g. Blackboard, WebCT)	☐	☐	☐	☐	☐
Wikipedia	☐	☐	☐	☐	☐

* 5: Do you ever access your University's electronic resources off-campus (i.e. from a PC not connected to the university network)?

If you answer 'yes' to this question please answer question 5a which will appear below.

☐ Yes

☐ No

5a: If you answered "yes", which resources do you access this way?

[   ]

2. Internet use

* 6a: How many hours in total do you usually spend on the Internet each week for personal purposes?

[   ]

* 6b: How many hours in total do you usually spend on the Internet each week for scholarly purposes?

[   ]

* 7: Do you own a personal computer (PC)?

☐ Yes

☐ No

8: If you live in university accommodation do you have access to the Internet from your room?

☐ Yes

☐ No

9: If/when you are able to visit the family home are you able to access the Internet during your visit?

☐ Yes

☐ No

* 10: How many hours do you usually spend on the following activities each week?
If you do not spend any time on an activity please enter 0.
Please write your answer(s) here:

Academic study: [   ]

Accessing media content (e.g. YouTube, BBC video links): [   ]

Chatting (e.g. via IRC, IM software, or chatrooms): [   ]

Online gaming: [   ]

Personal research: [   ]

Providing/sharing media content (e.g. YouTube, Daily Motion): [   ]

Using forums/bulletin boards: [   ]

Using networking sites (e.g. Facebook, MySpace, Friendster): [   ]

* 11: Do you communicate more than once per week with people online who you have never met face-to-face?

☐ Yes

☐ No

[Only answer this question if you answered 'Yes' to question '11 ']
11a: If so, why do you choose to communicate this way?

> [   ]

* 12: During which parts of the day do you often study for your university course?

Please choose *all* that apply:

- □ Morning (6am - noon)
- □ Afternoon (noon - 6pm)
- □ Evening (6pm - midnight)
- □ Night (midnight - 6am)

* 13: During which parts of the day do you often use the Internet?

Please choose *all* that apply:

- □ Morning (6am - noon)
- □ Afternoon (noon - 6pm)
- □ Evening (6pm - midnight)
- □ Night (midnight - 6am)

3. Service provision evaluation

You will next be asked to rate the same list of library services three times. In the first instance, indicate your minimum expectations for each service. Next, signify your ideal expectations. And, finally, indicate your experience of each service as it has been provided at your institution. For example, you might say that (1) you have a low expectation that audio-visual equipment would be provided by your library, (2) you have a high desire that it be provided, and (3) you are fairly dissatisfied with audio-visual equipment services at your university.

* 14a: When it comes to the following options please use the scale to indicate the <u>minimum expectation</u> you have for each service. A rating of 1 would indicate a low expectation (the service is unimportant to you), a rating of 4 would indicate a higher expectation (the service is important to you).

NB. These ratings are only for the absolute <u>minimum</u> you would expect from each service.

	4 - High	3	2	1 - Low
1. Photocopying facilities	☐	☐	☐	☐
2. Printing facilities	☐	☐	☐	☐
3. Computing facilities	☐	☐	☐	☐
4. Library website	☐	☐	☐	☐
5. Library catalogue	☐	☐	☐	☐
6. Reading list (core) material (inc. books, photocopy collections, short loan)	☐	☐	☐	☐
7. Other (general) printed resources (inc. books, journals)	☐	☐	☐	☐
8. Electronic resources (inc. e-journals, e-books, databases)	☐	☐	☐	☐
9. Book lending	☐	☐	☐	☐
10. Audio-visual equipment (inc. DVD players, televisions, headphones)	☐	☐	☐	☐
11. Self-service terminals	☐	☐	☐	☐
12. Opening hours suited to you	☐	☐	☐	☐
13. Induction or library training (information skills)	☐	☐	☐	☐
14. WiFi (wireless Internet connection) provision	☐	☐	☐	☐
15. General staff knowledge/expertise	☐	☐	☐	☐
16. Staff IT knowledge/support	☐	☐	☐	☐
17. Staff willingness to help	☐	☐	☐	☐
18. Quiet space for individual activities	☐	☐	☐	☐
19. Community space for group learning and group study	☐	☐	☐	☐
20. Refreshment facilities	☐	☐	☐	☐

* 14b: When it comes to the following options please use the scale to indicate the <u>desirability</u> you place on the provision of each service. A rating of 1 would indicate a low expectation (the service is unimportant to you), a rating of 4 would indicate a higher expectation (the service is important to you).

NB. These ratings are only for the <u>desired or ideal</u> level of service.

	4 - High	3	2	1 - Low
1. Photocopying facilities	☐	☐	☐	☐
2. Printing facilities	☐	☐	☐	☐
3. Computing facilities	☐	☐	☐	☐
4. Library website	☐	☐	☐	☐
5. Library catalogue	☐	☐	☐	☐
6. Reading list (core) material (inc. books, photocopy collections, short loan)	☐	☐	☐	☐
7. Other (general) printed resources (inc. books, journals)	☐	☐	☐	☐
8. Electronic resources (inc. e-journals, e-books, databases)	☐	☐	☐	☐
9. Book lending	☐	☐	☐	☐
10. Audio-visual equipment (inc. DVD players, televisions, headphones)	☐	☐	☐	☐
11. Self-service terminals	☐	☐	☐	☐
12. Opening hours suited to you	☐	☐	☐	☐
13. Induction or library training (information skills)	☐	☐	☐	☐
14. WiFi (wireless Internet connection) provision	☐	☐	☐	☐
15. General staff knowledge/expertise	☐	☐	☐	☐
16. Staff IT knowledge/support	☐	☐	☐	☐
17. Staff willingness to help	☐	☐	☐	☐
18. Quiet space for individual activities	☐	☐	☐	☐
19. Community space for group learning and group study	☐	☐	☐	☐
20. Refreshment facilities	☐	☐	☐	☐

* 14c: When it comes to the following options please use the scale to indicate <u>how satisfied</u> you are with the <u>actual performance</u> of each service.

NB. These ratings are only to show your <u>satisfaction</u> with the <u>actual</u> performance of each service, at present, in your university.

	4 - High	3	2	1 - Low
1. Photocopying facilities	☐	☐	☐	☐
2. Printing facilities	☐	☐	☐	☐
3. Computing facilities	☐	☐	☐	☐
4. Library website	☐	☐	☐	☐
5. Library catalogue	☐	☐	☐	☐
6. Reading list (core) material (inc. books, photocopy collections, short loan)	☐	☐	☐	☐
7. Other (general) printed resources (inc. books, journals)	☐	☐	☐	☐
8. Electronic resources (inc. e-journals, e-books, databases)	☐	☐	☐	☐
9. Book lending	☐	☐	☐	☐
10. Audio-visual equipment (inc. DVD players, televisions, headphones)	☐	☐	☐	☐
11. Self-service terminals	☐	☐	☐	☐
12. Opening hours suited to you	☐	☐	☐	☐
13. Induction or library training (information skills)	☐	☐	☐	☐
14. WiFi (wireless Internet connection) provision	☐	☐	☐	☐
15. General staff knowledge/expertise	☐	☐	☐	☐
16. Staff IT knowledge/support	☐	☐	☐	☐
17. Staff willingness to help	☐	☐	☐	☐
18. Quiet space for individual activities	☐	☐	☐	☐
19. Community space for group learning and group study	☐	☐	☐	☐
20. Refreshment facilities	☐	☐	☐	☐

4. Service priorities

* 15: In the following list, which of the two options in each case is more important to you?

*If the option on the left is more appealing to you then **score towards the left**. If the option on the right is more appealing to you then **score further towards the right**. If options are of equal importance to you then **score in the centre of the scale**.*

	More important		Equally important		More important	
Access to the library catalogue from outside of the library	☐	☐	☐	☐	☐	Access to the library catalogue from within the library
Electronic journals	☐	☐	☐	☐	☐	Print journals
E-books	☐	☐	☐	☐	☐	Print books
Studying in your own room	☐	☐	☐	☐	☐	Studying in the library
Designated noisy areas	☐	☐	☐	☐	☐	Designated quiet areas
Group study space	☐	☐	☐	☐	☐	Individual study space
Longer weekend opening hours (Saturday and Sunday)	☐	☐	☐	☐	☐	Longer week day opening hours (Monday to Friday)
Online helpdesk help/advice	☐	☐	☐	☐	☐	Face-to-face help/advice
Library website	☐	☐	☐	☐	☐	Printed library guides
Online information tutorials	☐	☐	☐	☐	☐	Face-to-face induction sessions
Self-service machines	☐	☐	☐	☐	☐	Staff issuing material
Online assignments in virtual learning environment	☐	☐	☐	☐	☐	Printed course assignments

5. Feedback

It would be helpful if you could provide some feedback on your experience completing this survey by answering the questions below. These final questions are optional.

i: How long (in minutes) did it take you to complete this survey?

[   ]

ii: Did you feel that you understood all of the questions?

☐ Yes

☐ No

[Only answer this question if you answered 'No' to question 'ii ']

iii: Which questions did you find confusing, and in what ways?

[text box]

iv: If you have any final comments on the survey please write them below:

[text box]

Submit Your Survey.
Thank you for completing this survey. Please fax your completed survey to: .

Appendix D – Additional results from the web-based survey of Millennials

Table D.1. Levels of computer ownership among Millennials.

Response	Institution				Mean
	A	B	C	D	
Yes	96.1%	96.3%	98.1%	96.0%	96.6%
No	1.3%	3.7%	1.9%	4.0%	2.7%
No response	2.6%	0.0%	0.0%	0.0%	0.7%

Table D.2. Internet access from within University accommodation.

Response	Institution				Mean
	A	B	C	D	
Yes	51.0%	29.6%	37.0%	36.0%	38.4%
No	1.3%	0.0%	5.6%	0.0%	1.7%
No response	47.7%	70.4%	57.4%	64.0%	59.9%

Table D.3. Internet access from within the family home.

Response	Institution				Mean
	A	B	C	D	
Yes	89.5%	85.2%	83.3%	80.0%	84.5%
No	3.3%	0.0%	3.7%	8.0%	3.7%
No response	7.2%	14.8%	13.0%	12.0%	11.8%

Table D.4. Levels of off-campus access.

Response	Institution				Mean
	A	B	C	D	
Yes	76.3%	88.9%	92.6%	88.0%	86.4%
No	22.7%	11.1%	7.4%	12.0%	13.3%
No response	1.0%	0.0%	0.0%	0.0%	0.2%

Table D.5. Online communication with individuals not previously met in-person.

Response	Institution				Mean
	A	B	C	D	
Yes	14.1%	25.9%	35.2%	20.0%	23.8%
No	82.6%	74.1%	64.8%	80.0%	75.4%
No response	3.3%	0.0%	0.0%	0.0%	0.8%

Table D.6. Internet use for non-scholarly activities.

Institution	Hours per week Mode	Hours per week Mean	Standard Deviation	Lowest Observation	1st Quartile	Median	3rd Quartile	Highest Observation
A	10.00	17.02	13.21	1.00	9.00	14.00	20.00	105.00
B	10.00	15.70	12.17	1.00	5.00	10.00	27.50	40.00
C	10.00	17.57	15.55	1.00	8.25	14.00	20.00	84.00
D	25.00	24.28	18.97	3.00	10.00	25.00	30.00	80.00
Mean	13.75	18.64	14.98	1.50	8.06	15.75	24.38	77.00

Table D.7. Internet use for academic study.

Institution	Hours per week Mode	Hours per week Mean	Standard Deviation	Lowest Observation	1st Quartile	Median	3rd Quartile	Highest Observation
A	5.00	10.71	8.85	1.00	5.00	8.00	15.00	50.00
B	5.00	10.63	7.80	1.00	5.00	8.00	15.00	35.00
C	10.00	11.81	10.91	2.00	5.00	8.00	14.25	60.00
D	15.00	12.96	7.76	3.00	7.00	10.00	15.00	30.00
Mean	8.75	11.53	8.83	1.75	5.50	8.50	14.81	44.00

Scholarly and personal Internet use among respondents from Institution A

Scholarly Use:

Personal Use:

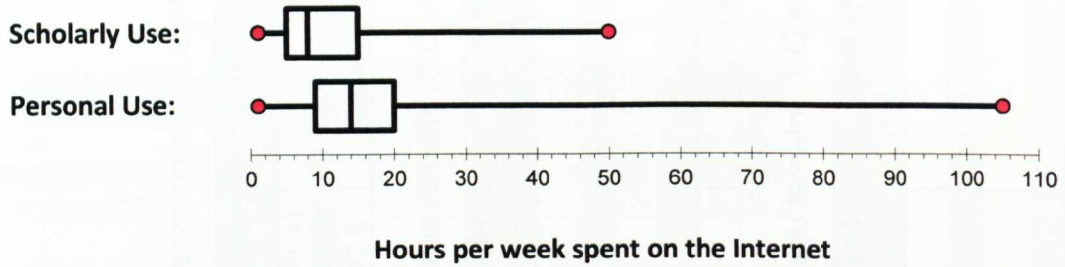Hours per week spent on the Internet

Figure D.1. Comparison of scholarly and non-scholarly Internet use at Institution A.

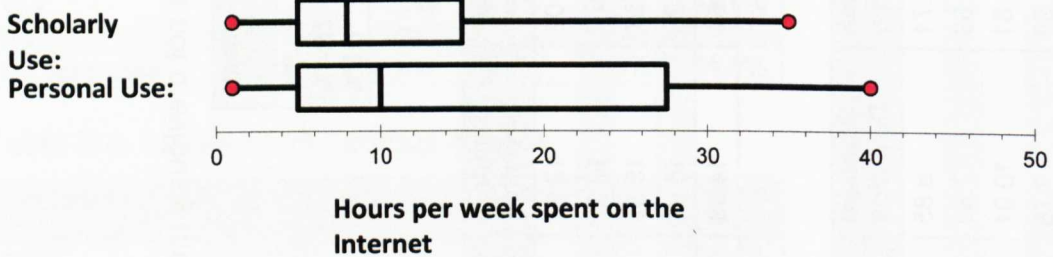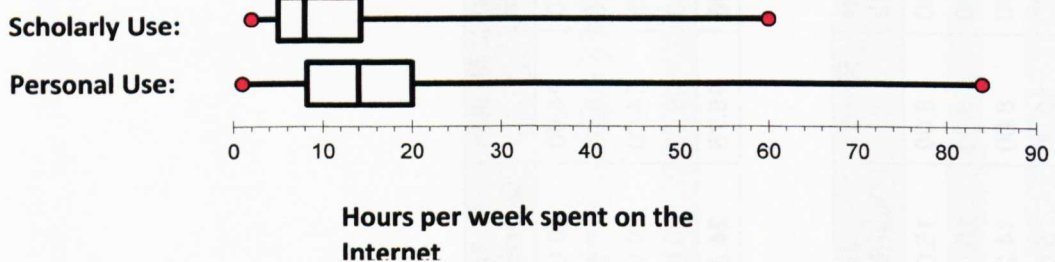# Scholarly and personal Internet use among respondents from Institution B

Scholarly Use:

Personal Use:

Hours per week spent on the Internet

Figure D.2. Comparison of scholarly and non-scholarly Internet use at Institution B.

Scholarly and personal Internet use among respondents from Institution C

Scholarly Use:

Personal Use:

Hours per week spent on the Internet

Figure D.3. Comparison of scholarly and non-scholarly Internet use at Institution C.

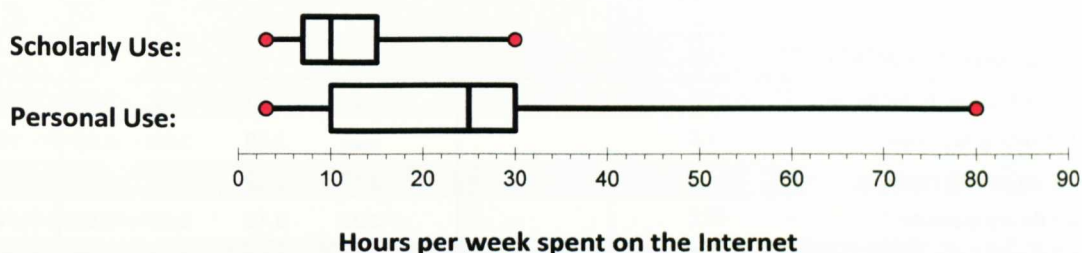## Scholarly and personal Internet use among respondents from Institution D

Figure D.4. Comparison of scholarly and non-scholarly Internet use at Institution D.

Table D.8. Academic study by time of day.

Time of day			Institution		Mean
	A	**B**	**C**	**D**	
Morning (6am - noon)	43.0%	44.4%	31.5%	40.0%	**39.7%**
Afternoon (noon - 6pm)	77.0%	70.4%	64.8%	72.0%	**71.0%**
Evening (6pm - midnight)	67.0%	88.9%	79.6%	88.0%	**80.9%**
Night (midnight - 6am)	17.0%	29.6%	20.4%	24.0%	**22.8%**

Table D.9. Internet use by time of day.

Time of day			Institution		Mean
	A	**B**	**C**	**D**	
Morning (6am - noon)	43.0%	44.4%	33.3%	40.0%	**40.2%**
Afternoon (noon - 6pm)	71.0%	63.0%	64.8%	72.0%	**67.7%**
Evening (6pm - midnight)	89.0%	92.6%	94.4%	92.0%	**92.0%**
Night (midnight - 6am)	36.0%	44.4%	48.1%	72.0%	**50.1%**

Table D.10. Correlation between periods of study and periods of Internet use.

Time of day			Institution		Mean
	A	**B**	**C**	**D**	
Morning (6am - noon)	25.7%	25.9%	20.4%	20.0%	**23.0%**
Afternoon (noon - 6pm)	57.9%	51.9%	48.1%	60.0%	**54.5%**
Evening (6pm - midnight)	63.2%	81.5%	74.1%	84.0%	**75.7%**
Night (midnight - 6am)	13.2%	29.6%	18.5%	24.0%	**21.3%**

Table D.11. Minimum expectations of service performance.

Service	Mean score				
			Institution		Overall
	A	B	C	D	
INFORMATION CONTROL					
1. Photocopying facilities	2.89	3.31	3.12	3.00	**3.08**
2. Printing facilities	3.23	3.38	3.56	4.00	**3.54**
3. Computing facilities	3.47	3.62	3.69	4.00	**3.69**
4. Library website	3.23	3.12	3.46	4.00	**3.45**
5. Library catalogue	3.51	3.54	3.60	4.00	**3.66**
6. Reading list material (e.g. books, photocopy collections, short loan)	3.51	3.62	3.48	4.00	**3.65**
7. Other (general) printed resources (e.g.. books, journals)	3.23	3.38	3.42	3.00	**3.26**
8. Electronic resources (e.g.. e-journals, e-books, databases)	2.98	3.35	3.29	4.00	**3.40**
9. Book lending	3.47	3.77	3.63	4.00	**3.72**
10. AV equipment (e.g.. DVD players, televisions, headphones)	2.14	2.62	2.50	3.00	**2.56**
11. Self-service terminals	2.80	2.77	3.06	3.00	**2.91**
12. Opening hours suited to you	3.27	3.35	3.52	4.00	**3.53**
13. Induction or library training (information skills)	2.58	2.58	2.83	3.00	**2.75**
14. Wi-Fi (wireless Internet connection) provision	2.71	2.65	3.02	3.00	**2.85**
AFFECT OF SERVICE					
15. General staff knowledge/expertise	3.25	3.31	3.31	3.00	**3.22**
16. Staff IT knowledge/support	3.10	2.77	3.21	3.00	**3.02**
17. Staff willingness to help	3.44	3.46	3.40	4.00	**3.58**
LIBRARY AS PLACE					
18. Quiet space for individual activities	3.46	3.65	3.50	4.00	**3.65**
19. Community space for group learning and group study	3.01	3.31	3.31	3.00	**3.16**
20. Refreshment facilities	2.63	3.19	2.71	2.00	**2.63**
Overall Mean Score	**3.10**	**3.24**	**3.28**	**3.45**	**3.27**

Table D.12. Minimum expectations of service performance by category.

Category	Mean score				
			Institution		Overall
	A	B	C	D	
Information Control	3.07	3.22	3.30	3.25	**3.21**
Affect of Service	3.27	3.18	3.31	3.12	**3.22**
Library as Place	3.03	3.38	3.17	3.15	**3.18**
Overall	**3.12**	**3.26**	**3.26**	**3.17**	**3.20**

Table D.13. Ideal/desired levels of service performance.

Service	Mean score				Overall
	A	B	Institution C	D	Overall
INFORMATION CONTROL					
1. Photocopying facilities	3.14	3.46	3.39	3.12	**3.28**
2. Printing facilities	3.31	3.58	3.75	3.72	**3.59**
3. Computing facilities	3.53	3.77	3.75	3.92	**3.74**
4. Library website	3.36	3.04	3.43	3.80	**3.41**
5. Library catalogue	3.56	3.62	3.67	3.92	**3.69**
6. Reading list material (e.g. books, photocopy collections, short loan)	3.60	3.65	3.69	3.92	**3.72**
7. Other (general) printed resources (e.g.. books, journals)	3.40	3.54	3.57	3.64	**3.54**
8. Electronic resources (e.g.. e-journals, e-books, databases)	3.22	3.19	3.47	3.72	**3.40**
9. Book lending	3.58	3.77	3.75	3.88	**3.74**
10. AV equipment (e.g.. DVD players, televisions, headphones)	2.33	2.73	2.82	2.44	**2.58**
11. Self-service terminals	3.12	2.88	3.31	3.28	**3.15**
12. Opening hours suited to you	3.52	3.62	3.75	3.84	**3.68**
13. Induction or library training (information skills)	2.76	2.58	2.82	2.60	**2.69**
14. Wi-Fi (wireless Internet connection) provision	2.93	3.12	3.29	3.08	**3.10**
AFFECT OF SERVICE					
15. General staff knowledge/expertise	3.42	3.35	3.49	3.44	**3.42**
16. Staff IT knowledge/support	3.30	2.92	3.45	3.20	**3.22**
17. Staff willingness to help	3.54	3.50	3.65	3.60	**3.57**
LIBRARY AS PLACE					
18. Quiet space for individual activities	3.55	3.54	3.76	3.84	**3.67**
19. Community space for group learning and group study	3.19	3.27	3.55	3.60	**3.40**
20. Refreshment facilities	2.94	3.00	3.22	3.00	**3.04**
Overall Mean Score	**3.27**	**3.31**	**3.48**	**3.48**	**3.38**

Table D.14. Ideal/desired levels of service performance by category.

Category	Mean score				Overall
	A	B	Institution C	D	Overall
Information Control	3.24	3.32	3.46	3.49	**3.38**
Affect of Service	3.42	3.26	3.53	3.41	**3.40**
Library as Place	3.23	3.27	3.51	3.48	**3.37**
Overall	**3.29**	**3.28**	**3.50**	**3.46**	**3.38**

Table D.15. Perceived levels of service performance.

Service	Mean score				
			Institution		Overall
	A	B	C	D	
INFORMATION CONTROL					
1. Photocopying facilities	3.08	3.46	3.04	2.92	**3.12**
2. Printing facilities	3.03	3.08	3.04	3.28	**3.11**
3. Computing facilities	3.29	2.85	3.35	3.28	**3.19**
4. Library website	3.40	3.31	3.33	3.52	**3.39**
5. Library catalogue	3.40	3.69	3.41	3.64	**3.54**
6. Reading list material (e.g. books, photocopy collections, short loan)	3.07	3.04	3.10	3.40	**3.15**
7. Other (general) printed resources (e.g.. books, journals)	3.12	3.08	3.20	3.16	**3.14**
8. Electronic resources (e.g.. e-journals, e-books, databases)	2.99	2.88	3.10	3.28	**3.06**
9. Book lending	3.27	3.46	3.33	3.40	**3.37**
10. AV equipment (e.g.. DVD players, televisions, headphones)	2.65	2.69	3.00	2.76	**2.78**
11. Self-service terminals	3.51	3.27	3.65	3.48	**3.48**
12. Opening hours suited to you	3.16	2.62	3.94	3.36	**3.27**
13. Induction or library training (information skills)	3.07	3.19	3.04	3.12	**3.11**
14. Wi-Fi (wireless Internet connection) provision	3.14	1.42	3.27	3.44	**2.82**
AFFECT OF SERVICE					
15. General staff knowledge/expertise	3.27	3.46	3.35	3.20	**3.32**
16. Staff IT knowledge/support	3.21	3.15	3.39	3.20	**3.24**
17. Staff willingness to help	3.22	3.42	3.35	3.32	**3.33**
LIBRARY AS PLACE					
18. Quiet space for individual activities	3.18	3.15	3.24	3.40	**3.24**
19. Community space for group learning and group study	2.86	3.42	3.27	3.16	**3.18**
20. Refreshment facilities	3.27	2.19	2.02	1.60	**2.27**
Overall Mean Score	**3.16**	**3.04**	**3.22**	**3.20**	**3.15**

Table D.16. Perceived levels of service performance by category.

Category	Mean score				
			Institution		Overall
	A	B	C	D	
Information Control	3.16	3.00	3.27	3.29	**3.18**
Affect of Service	3.23	3.35	3.37	3.24	**3.30**
Library as Place	3.10	2.92	2.84	2.72	**2.90**
Overall	**3.16**	**3.09**	**3.16**	**3.08**	**3.12**
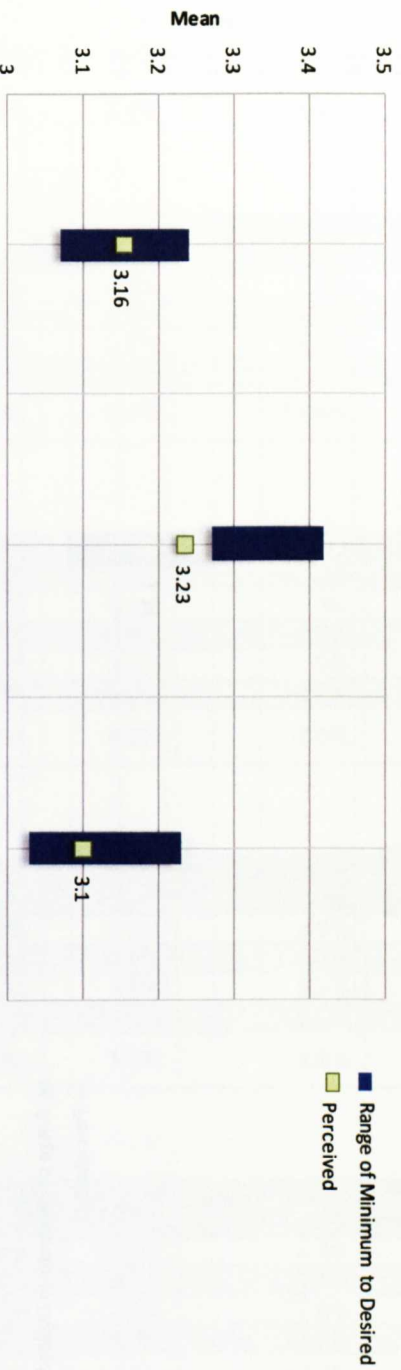
Figure D.5. Service adequacy gap analysis at Institution A.
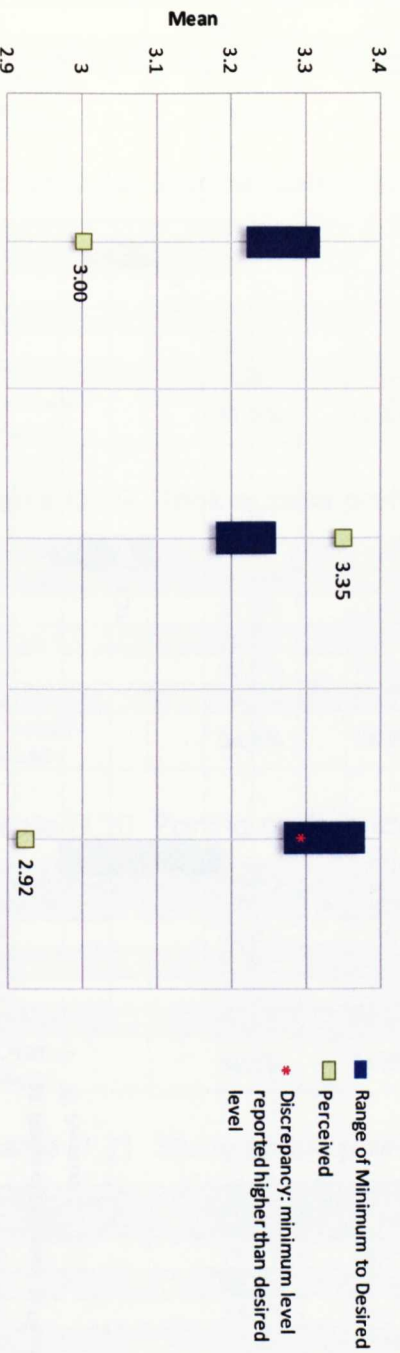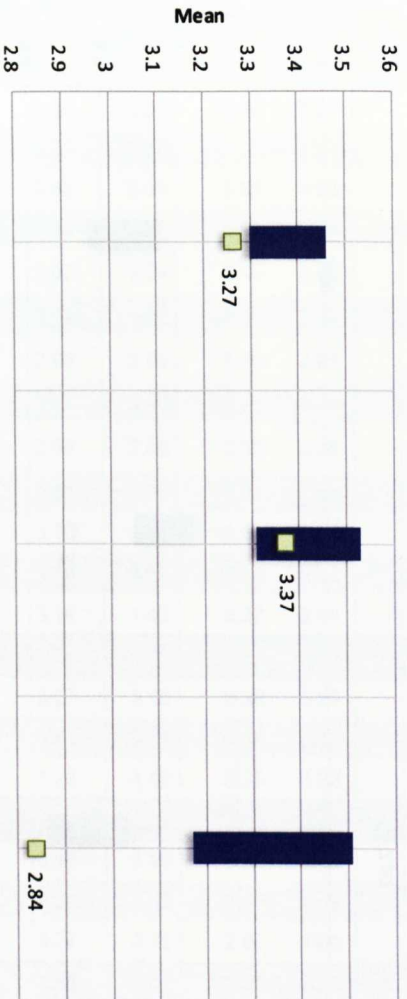

Figure D.6. Service adequacy gap analysis at Institution B.

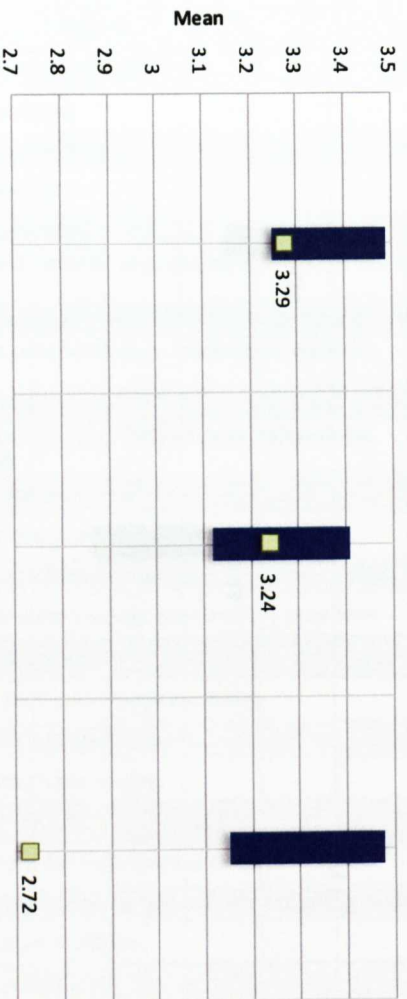Figure D.7. Service adequacy gap analysis at Institution C.

Legend: Range of Minimum to Desired; Perceived

Mean

Information Control — 3.27
Affect of Service — 3.37
Library as Place — 2.84

Figure D.8. Service adequacy gap analysis at Institution D.

Legend: Range of Minimum to Desired; Perceived

Mean

Information Control — 3.29
Affect of Service — 3.24
Library as Place — 2.72

Table D.17. Catalogue access preference.

Institution / Score	1 – Online	2	3	4	5 – Within library	No response
A	7.2%	7.6%	47.4%	8.2%	17.1%	12.5%
B	3.7%	3.7%	59.3%	0.0%	25.9%	7.4%
C	7.4%	3.7%	51.9%	5.6%	24.1%	7.4%
D	8.0%	0.0%	72.0%	8.0%	12.0%	0.0%
Overall Mean	6.6%	3.7%	57.6%	5.4%	19.8%	6.8%

Table D.18. Journal access preference.

Institution / Score	1 – e-journals	2	3	4	5 – print journals	No response
A	7.6%	15.8%	47.4%	8.2%	17.1%	12.5%
B	11.1%	11.1%	59.3%	0.0%	25.9%	7.4%
C	22.2%	11.1%	51.9%	5.6%	24.1%	7.4%
D	4.0%	12.0%	72.0%	8.0%	12.0%	0.0%
Overall Mean	11.2%	12.5%	57.6%	5.4%	19.8%	6.8%

Table D.19. Book access preference.

Institution / Score	1 – e-books	2	3	4	5 – print books	No response
A	31.9%	21.7%	20.7%	6.9%	6.3%	12.5%
B	55.6%	11.1%	22.2%	0.0%	3.7%	7.4%
C	42.6%	18.5%	27.8%	1.9%	1.9%	7.4%
D	8.0%	28.0%	24.0%	16.0%	24.0%	0.0%
Overall Mean	34.5%	19.8%	23.7%	6.2%	9.0%	6.8%

Table D.20. Zoning preference.

Institution / Score	1 – noisy areas	2	3	4	5 – quiet areas	No response
A	36.5%	17.4%	25.0%	4.9%	3.6%	12.5%
B	37.0%	14.8%	37.0%	0.0%	3.7%	7.4%
C	37.0%	14.8%	35.2%	1.9%	3.7%	7.4%
D	36.0%	16.0%	48.0%	0.0%	0.0%	0.0%
Overall Mean	36.6%	15.8%	36.3%	1.7%	2.8%	6.8%

Table D.21. Study space preference.

Institution / Score	1 – group study	2	3	4	5 – individual study	No response
A	21.7%	18.8%	36.8%	5.3%	4.9%	12.5%
B	25.9%	7.4%	48.1%	3.7%	7.4%	7.4%
C	13.0%	20.4%	48.1%	3.7%	7.4%	7.4%
D	24.0%	12.0%	56.0%	4.0%	4.0%	0.0%
Overall Mean	21.1%	14.6%	47.3%	4.2%	5.9%	6.8%

Table D.22. Extended opening hours preference.

Institution / Score	1 - Weekend	2	3	4	5 - Weekday	No response
A	11.5%	16.1%	37.2%	10.5%	12.2%	12.5%
B	25.9%	7.4%	40.7%	7.4%	11.1%	7.4%
C	20.4%	13.0%	42.6%	7.4%	9.3%	7.4%
D	4.0%	12.0%	60.0%	12.0%	12.0%	0.0%
Overall Mean	15.5%	12.1%	45.1%	9.3%	11.1%	6.8%

Table D.23. Medium of service support preference.

Institution / Score	1 - Online	2	3	4	5 – Face-to-face	No response
A	20.4%	20.7%	37.8%	4.6%	3.9%	12.5%
B	18.5%	11.1%	44.4%	7.4%	11.1%	7.4%
C	29.6%	20.4%	29.6%	5.6%	7.4%	7.4%
D	4.0%	32.0%	56.0%	4.0%	4.0%	0.0%
Overall Mean	18.1%	21.1%	42.0%	5.4%	6.6%	6.8%

Table D.24. Method of delivering guidance preference.

Institution / Score	1 – Library website	2	3	4	5 – Printed guides	No response
A	2.0%	2.3%	30.3%	26.0%	27.0%	12.5%
B	3.7%	3.7%	33.3%	22.2%	29.6%	7.4%
C	3.7%	9.3%	20.4%	24.1%	35.2%	7.4%
D	0.0%	4.0%	24.0%	24.0%	48.0%	0.0%
Overall Mean	2.3%	4.8%	27.0%	24.1%	34.9%	6.8%

Table D.25. Medium for attending instructional sessions preference.

Institution / Score	1 - Online	2	3	4	5 – Face-to-face	No response
A	8.2%	15.5%	36.2%	18.1%	9.5%	12.5%
B	7.4%	18.5%	51.9%	7.4%	7.4%	7.4%
C	7.4%	16.7%	37.0%	18.5%	13.0%	7.4%
D	8.0%	16.0%	32.0%	36.0%	8.0%	0.0%
Overall Mean	7.8%	16.7%	39.3%	20.0%	9.5%	6.8%

Table D.26. Method for borrowing materials preference.

Institution / Score	1 – Self-service terminals	2	3	4	5 – Asking staff	No response
A	4.3%	5.3%	26.3%	27.6%	24.0%	12.5%
B	14.8%	11.1%	37.0%	18.5%	11.1%	7.4%
C	0.0%	7.4%	29.6%	20.4%	35.2%	7.4%
D	0.0%	8.0%	44.0%	20.0%	28.0%	0.0%
Overall Mean	4.8%	7.9%	34.2%	21.6%	24.6%	6.8%

Table D.27. Assignment delivery preference.

Institution / Score	1 - VLE	2	3	4	5 – Traditional print media	No response
A	18.1%	17.1%	35.2%	9.5%	7.6%	12.5%
B	40.7%	7.4%	29.6%	7.4%	7.4%	7.4%
C	20.4%	16.7%	40.7%	7.4%	7.4%	7.4%
D	4.0%	12.0%	64.0%	12.0%	8.0%	0.0%
Overall Mean	20.8%	13.3%	42.4%	9.1%	7.6%	6.8%

Appendix E – Online focus discussion framework

Views on generational / self identity
What sort of characteristics do you think people in your age group share? Do you identify yourself as sharing these similar traits, or with being part of a 'generation'?
Your answer:
Think more specifically about how you use the Internet: what sorts of websites do you visit? Why do you use the Internet?
Your answer:

Views on University library/learning resource service
What are your reasons for using the library/learning resource centre and services?
Your answer:
In a perfect world what would you change about the library/learning resource centre and services? If *you* were in charge what would you offer students like yourselves?
Your answer:
Do you think library/learning resource centre staff serve an important role?
Your answer:

Appendix F – Preliminary thematic content analysis of online focus group data

Table F.1. Key responses to OFG Q1 at Institution A.

Respondent	What sort of characteristics do you think people in your age group share? Do you identify yourself as sharing these similar traits, or with being part of a 'generation'? Categorised Key Responses to Q1 at Institution A		
	1 [Outlook]	2 [Behaviour]	3 [Upbringing]
1		- Active lifestyle (clubbing, binge drinking). - Lazy (lack employment).	- Few money concerns. - Greater freedom and independence.
2	- Apathetic. - Materialistic. - Driven. - Focused on change.	- Stressed. - Demanding and needy.	- Knowledgeable. - Educated.
3	- Need for independence but hold to family-oriented outlook.	- Active and adventurous lifestyle. - Keen interest in music and technology.	
4	- Ambitious. - Assume "things will work out".		- Take things for granted "due to a more technologically advanced world".

Table F.2. Key responses to OFG Q1 at Institution B.

Respondent	What sort of characteristics do you think people in your age group share? Do you identify yourself as sharing these similar traits, or with being part of a 'generation'? Categorised Key Responses to Q1 at Institution B		
	1 [Outlook]	2 [Behaviour]	3 [Upbringing]
1	- Frustrated at the pace of learning in lectures.	- Embraces the Internet. - Wary of trusting everything they read online. - Skilled at sifting through information (acquired through experience). - Prefer individual study.	- Voice can be heard more easily. - More easily informed (a result of the Internet).

Table F.3. Key responses to OFG Q1 at Institution C.

Respondent	What sort of characteristics do you think people in your age group share? Do you identify yourself as sharing these similar traits, or with being part of a 'generation'? Categorised Key Responses to Q1 at Institution C		
	1 [Outlook]	2 [Behaviour]	3 [Upbringing]
1	- Materialistic. - Wants the latest of everything. - Seek more convenient means for studying and collaborating (less need for face-to-face meetings).	- **Agrees with C** about impatience. - Increasingly unsociable (texting, social networking, and emailing replacing face-to-face contact). - Reduced family contact as a result of easier means to contact friends and acquaintances. - Don't read books anymore (use Google to find information more quickly and easily).	- Technology enables and encourages instant gratification (observes this is not just among Millennials). - Reduced privacy from tools such as Facebook. - More easily informed (a result of the Internet).
2	- Ambitious. - Expect convenience. - **Agrees with A** about collaboration, adding that technology puts everyone on an equal footing to start with.	- More open, less secrets. - More social (able to stay in contact more easily, technology makes it easier to share opinions and worries). - **Disagrees with A** over reduced privacy arguing this is a choice. - Lazy: "everything you need to know is at your fingertips". - **Agrees with A** that reading is less popular.	- Dependence on technology: cannot escape it, and "we rely on technology too much!"
3	- Observes that some collaboration would be impossible without technology (cites the online focus group as an example).	- Impatient. - **Agrees with A** over increasingly unsociable behaviour through texting, social networking and email adding that Millennials have "no time for families". - "Last minute attitude" with Google as a fallback. - **Agrees with B** about laziness. - **Agrees with A** that reading is less popular: "everything is online...even books".	- Dependence on technology: "nothing works if technology fails for us...we can't imagine a world without [the] Internet [and] mobile phones."

Table F.4. Key responses to OFG Q1 at Institution D.

Respondent	What sort of characteristics do you think people in your age group share? Do you identify yourself as sharing these similar traits, or with being part of a 'generation'? Categorised Key Responses to Q1 at Institution D		
	1 [Outlook]	2 [Behaviour]	3 [Upbringing]
1	- Less judgemental. - Don't like to be labelled. - Don't like to have the same learning style imposed upon them: "I personally like to make a choice about how I learn. I know myself best at the end of the day and don't like to be told how I HAVE to learn." - High expectations.	- More outgoing and socially aware. - Lack responsibility and blame others for mistakes. - Impatient as a result of the Internet: "the Internet has made people a lot more impatient…last week I had a problem with my Internet connection and was without it for 48 hours and I thought the world had ended!"	- Independent and less pressure to follow family tradition. - More easily informed (a result of the Internet).
2	- Fashion and image conscious: attention seeking.	- Love reading [contrasts with general feeling]. - Prefer individual study.	- IT has changed the way of doing things for this generation. - **Agrees with C** that life is easier with technology.
3		- Impatient: "It's all about the here and now…companies [and] employers don't have time to wait and see."	- Less of a competitive edge: equity of information diminishes effect of individual skill. - Harder to stand out from the crowd. - Life is easier with technology and inventions. - Find it easy to use technology: "it is encoded in us…sort of when we become teenagers there is the boom of this thing called Internet - we take it along because that's really the age we learn…as my granny [was with] newspapers [because] they were the HIT at her teenage years".
4	- Love of freedom. - Love of adventure. - **Agrees with C** that fashion is a label/identity and displays wealth and class.	- Seldom lazy [contrasts with general feeling]. - Sharing. - Prefer the easier way.	- **Agrees with C** that life is easier with technology. - Values come from being brought up with more freedom than parents enjoyed. - Life is easier with technology: greater access to information and other people. - Risk of dependence on technology.
5	- Use of fashion to present an identity: "people especially of our age show who they are through their clothes". - Don't like to be labelled: "I've always hated being classified". - No gender boundaries in use of technology: argues video gaming is as much for women as men.	- Keen interest in music. - Prefer technology to traditional activities such as reading or communicating face-to-face.	- Live in a "consumption society". - Love of technology (highlights gadgets such as iPods and laptops). - Find it easy to use technology: grew up with it and "it's part of our life".

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Table F.5. Key responses to OFG Q2 at Institution A.

Respondent	Think more specifically about how you use the Internet: what sorts of websites do you visit? Why do you use the Internet? Categorised Key Responses to Q2 at Institution A				
	1 [Communication]	2 [Study]	3 [Current affairs]	4 [Leisure]	5 [Online image]
1	- Facebook. - Email.	- Electronic journals.			
2	- Facebook. - To find things out about the way other people live.	- Academic study.	- BBC.	- YouTube. - Personal hobbies and interests (e.g. Running/religion).	
3	- Social networking sites. - Email.	- Academic study.	- News.	- Internet television. - YouTube. - Booking events. - Arranging travel.	
4	- Local/international communication.	- Academic study and research. - Desire to broaden knowledge.		- Accessing media content (movies, television, music).	

Table F.6. Key responses to OFG Q2 at Institution B.

Respondent	Think more specifically about how you use the Internet: what sorts of websites do you visit? Why do you use the Internet? Categorised Key Responses to Q2 at Institution B				
	1 [Communication]	2 [Study]	3 [Current affairs]	4 [Leisure]	5 [Online image]
1	- Facebook.	-Wikipedia (ease of use, breadth of information).	- Reddit (less biased than traditional media). - Aggregation services (less biased, more information).	- Metacritic (videogame/film reviews).	- Maintains unique identity online (wants to be recognised). - More open online (less anonymity, less accountability).

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Table F.7. Key responses to OFG Q2 at Institution C.

Respondent	Think more specifically about how you use the Internet: what sorts of websites do you visit? Why do you use the Internet? Categorised Key Responses to Q2 at Institution C				
	1 [Communication]	2 [Study]	3 [Current affairs]	4 [Leisure]	5 [Online image]
1	- Email.	- Studying (student portal).	- News.	- Shopping (cheaper, easier to compare prices, can shop at convenient times, no pushy salesperson). - Stopped using LimeWire (music downloading tool) over PC security concerns.	- Presents honest picture of self online but was more outgoing on Facebook when starting University.
2	- To stay in contact with friends/family.	- Studying/research.		- Book holidays (easier to find best deals). - Easier to browse online without salespeople nagging or pressuring. - Stopped using music download sites over PC security concerns.	- Presents honest picture of self online including on Facebook since everyone already knows them.
3	- Social networking sites. - Email. - LinkedIn (for professional/career advice).	- Search engines. - University website (student portal).	- Only reads newspapers online.	- Online shopping (e.g. mobile phones/laptops; easier to find best deals) - YouTube - Booking events - Arranging travel	- Presents honest picture of self online.

Table F.8. Key responses to OFG Q2 at Institution D.

Respondent	Think more specifically about how you use the Internet: what sorts of websites do you visit? Why do you use the Internet? Categorised Key Responses to Q2 at Institution D				
	1 [Communication]	2 [Study]	3 [Current affairs]	4 [Leisure]	5 [Online image]
1	- Facebook (social networking and arranging everyday events). - Email.	- Student portal (lecture notes, and student news). - Online journals/databases.	- BBC (to maintain awareness of events outside "student bubble").	- Online radio. - Online banking.	- Used to present a more sociable person online, finding it easier to communicate, but confidence gained from University has changed this outlook.
2	- Facebook ("I think most people have this").	- Google. - Yahoo Search (for coursework resources).			
3	- Facebook ("though I only use [it] because everyone here in the UK does...I am like obliged to - I can't contact people otherwise").	- Google Maps. - Google (in general and as a starting point). - Wikipedia. - Brittanica.	- BBC News. - BBC Weather.	- YouTube. - Cooking websites.	
4	- Email. - Facebook. - To connect with people (cheaper, easier, more fun, can connect with many people at once).	- University website. - Google. - Yahoo.		- YouTube. - IGN (video game and film reviews). - Travel visa information.	- Presents honest picture of self online (often uses own photo as avatar and own name as username).
5	- Facebook.	- Google - Student portal		- Shopping. - Eurostar (travel). - SurftheChannel (tv/movie streaming). - Sidereel (entertainment guide).	- Presents honest picture of self online.

Table F.9. Key responses to OFG Q3 at Institution A.

Respondent	What are your reasons for using the library/learning resource centre and services? Categorised Key Responses to Q3 at Institution A			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1		- Resources for course are available.	- Conducive to study: a "quiet space for studying".	
2		- For course/study materials. - For reading books related to general interests (e.g. Fiction).		
3		- For reading course/study materials	- Quiet study.	- For research and references.
4			[no response]	

Table F.10. Key responses to OFG Q3 at Institution B.

Respondent	What are your reasons for using the library/learning resource centre and services? Categorised Key Responses to Q3 at Institution B			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1		- Books are expensive. - Good selection of academic books.	- Conducive to study (quiet environment, computer facilities). - AV and group study facilities are good but not required by course.	

Table F.11. Key responses to OFG Q3 at Institution C.

Respondent	What are your reasons for using the library/learning resource centre and services? Categorised Key Responses to Q3 at Institution C			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1		- Looking through journals. - Loaning books. - Handy to check email on computers during lecture breaks. - Doesn't use print services (cheaper and more convenient to print at home; printers hard to use - e.g. Duplex - and no guarantee of adequate toner).	- Hard to work (noisy environment even in quiet areas). - Group work rooms with computers. - Group work floor with sofas.	
2		- "Sometimes it's easier to pinpoint information in a book". - Computers (fast, easy to find a spare one). - **Disagrees with A** over printing (finds it easier and cheaper in University).	- Group study rooms which can be hired out.	
3	- Internet access.	- Journals. - Reference books. - Work done by other students. - Photocopying and scanning (case studies for tutorials).	- To complete assignments and student dissertations. - **Agrees with B** that group study rooms are useful (lots of group work on course).	

Table F.12. Key responses to OFG Q3 at Institution D.

| Respondent | What are your reasons for using the library/learning resource centre and services? Categorised Key Responses to Q3 at Institution D | | | |
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1	- 24-hour access. - Ease of computer access.	- Books and journals (resources are free, medical text books are too expensive).	- Conducive to study "Good space which focuses you on working". - Group working area.	
2	- Free of charge.	- Agrees with C about resources used.	- Conducive to study: "the library is the best place to study".	
3	- Agrees with B about free access.	- Films. - Books. - Computers.	- Conducive to study.	- Skills workshops.
4		- Project information. - DVDs (entertainment). - Photocopying and printing.	- Conducive to study: "everybody around you is studying...[and] printers and computers [are] close to you". - Discussion area.	
5		- Computers. - Books and resources flagged by VLE/subject. - DVDs (entertainment).	- Conducive to study: "It's a nice place to study, puts you in the mood".	

Table F.13. Key responses to OFG Q4 at Institution A.

Respondent	In a perfect world what would you change about the library/learning resource centre and services? If you were in charge what would you offer students like yourselves? Categorised Key Responses to Q4 at Institution A			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1	- Longer opening hours.	- More computers.	- More study space: "it's often hard to find a table". - Cheaper cafe by the library.	
2	- Longer opening hours.	- Fiction collection.	- More comfortable, less intimidating, environment.	
3	- More ports for laptops.	- More copies of core study materials. - More copies of books with longer loan periods.	- Comfortable seating area (sofas).	
4	- More lenient loan periods/fines: "greater leniency towads hardcopy material". - Longer opening hours.	- Photocopying allowance. - More print and electronic resources.	- More silent areas and emphasis on silent study regulations. - Emphasis on study aspects of library service rather than social aspects.	- Weekend staff.

Table F.14. Key responses to OFG Q4 at Institution B.

Respondent	In a perfect world what would you change about the library/learning resource centre and services? If you were in charge what would you offer students like yourselves? Categorised Key Responses to Q4 at Institution B			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1	- 24-hour opening especially at exam time.	- More computers. - Larger fiction collection.		

Table F.15. Key responses to OFG Q4 at Institution C.

| Respondent | In a perfect world what would you change about the library/learning resource centre and services? If you were in charge what would you offer students like yourselves? Categorised Key Responses to Q4 at Institution C | | | |
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1	- Better marketing of computer labs to ease demand on computers in main library. - More self-service terminals on each floor. - Evaluate late fees: currently cheaper to pay late fees and keep book than to buy a copy.	- More carrier bags when loaning resources.	- Water machines (refreshment facilities). - **Agrees with B** that heating control should be improved. - Move books from second floor to ground floor (not currently convenient). - Rooms dedicated to A/V provision.	- More social events.
2	- Printing should be cheaper. - Laptops for hire longer than one hour. - Better loan restrictions: "some books are never there...[and]...some people seem to have the same book out for months."	- More copies of course-related books.	- Toilets should be on every floor inside library, not outside. - Better heating control. - Free water machines (refreshment facilities).	
3	- Easier access to books required for course. - **Agrees with A** that more self-service terminals would reduce conflicts over accessing materials.		- Same layout on every floor. - **Agrees with A** that book stock should be distributed rather than on higher floors only.	

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Table F.16. Key responses to OFG Q4 at Institution D.

Respondent	In a perfect world what would you change about the library/learning resource centre and services? If you were in charge what would you offer students like yourselves? Categorised Key Responses to Q4 at Institution D			
	1 [Access]	2 [Resources]	3 [Environment]	4 [Support]
1	- More self-service terminals; currently these are only available during limited times of the day. - Better marketing/awareness of faculty librarian: "I have no idea where to find her".	- More key texts available as e-books.	- Other libraries on campus should provide group study areas. - Greater leniency over food/drink regulations: "I would definitely change the rule about no coffee in the library!"	
2		- "More advanced technology services to keep students update with modern technology."		- More activities for students to engage with new friends and to encourage students to use the library.
3			- Better heating in a few places. - "I think the library is just as perfect as one can be."	- **Agrees with B** about group activities.
4	- More user-friendly "searching webpage" (i.e. library catalogue). - Reduced photocopying charges. - More e-resources (books and reports) which are easier to use.	- More/newer DVDs (for entertainment). - More e-resources (books and reports) which are easier to use. - More copies of latest editions of text books. - **Agrees with C** that additional computer cluster would be desirable.		
5	- Better mobile phone reception in underground levels. - **Agrees with B** that more e-resources would be beneficial since these overcome difficulties accessing printed copies.	- **Agrees with B** that more e-resources would be beneficial since these overcome difficulties accessing printed copies. - Additional computer cluster. - Fiction and foreign language materials.	- Water machines.	- More staff for directional purposes.

Table F.17. Key responses to OFG Q5 at Institution A.

| Respondent | Do you think library/learning resource centre staff serve an important role? Categorised Key Responses to Q5 at Institution A | | | | |
	1 [Procedural]	2 [Directional]	3 [Subject support]	4 [Technical support]	5 [Affect of service]
1					- They are "very important" (lacks qualification).
2		- For directional purposes.			- Important to be friendly, approachable, and accessible. - Staff important particularly for new users.
3		- For directional purposes: "they can often help me to find books, online journals, and references."			
4					- Staff should "be more approachable" and should "demonstrate to students that they are a valuable resource in helping research."

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Table F.18. Key responses to OFG Q5 at Institution B.

Respondent	Do you think library/learning resource centre staff serve an important role? Categorised Key Responses to Q5 at Institution B				
	1 [Procedural]	2 [Directional]	3 [Subject support]	4 [Technical support]	5 [Affect of service]
1	- Collects reserved books from staff. - Enquiries about resources (e.g. dissertations, interlibrary loans, e-journals).				- Not always obvious how to get information online. - Not everyone is comfortable with finding information online. - Staff serve an important role "even if they are not used." - Satisfied with staff: "they have always been able to answer my questions".

Table F.19. Key responses to OFG Q5 at Institution C.

Respondent	Do you think library/learning resource centre staff serve an important role? Categorised Key Responses to Q5 at Institution C				
	1 [Procedural]	2 [Directional]	3 [Subject support]	4 [Technical support]	5 [Affect of service]
1	- For printing and items on hold.			- For help with PCs.	- Rigorous application of regulations (e.g. finding a book on the shelves which was on hold and being refused the option of loaning it.) - Poor customer service (e.g. being directed to self-service "like it was above him to check a book out for me".) - Variable customer service and conflicting advice. - Helpful for answering questions but "they're becoming somewhat obsolete." - Prefers self-service (quick, easy, no queue).
2	- Staff are mainly there as a backup.			- For help with machines, and for pin numbers/access codes.	- Sympathises with A over experiences. - Variable customer service: "I think the library staff are good if you get the right people - a couple are just rude". - Prefers self-service but likes staff presence "just in case".
3	- Staff are mainly there as a backup.				- Sympathises with A: claims similar experiences but observes everyone is treated equally. - Staff are "very cooperative". - Generally satisfied with library staff.

Table F.20. Key responses to OFG Q5 at Institution D.

Respondent	Do you think library/learning resource centre staff serve an important role? Categorised Key Responses to Q5 at Institution D				
	1 [Procedural]	2 [Directional]	3 [Subject support]	4 [Technical support]	5 [Affect of service]
1	- For fine/loan information which is not well advertised.	- For directions to materials which are difficult to find (e.g. high demand/reference sections).	- For advice on further reading and relevant resources (faculty librarians).	- For IT help "though they don't seem to have training to answer those questions".	- Staff do not serve an important role: "everything right now is using the IT system...everything which is library related can be transmitted into paper or computer".
2					- Prefers asking a person than reading instructions "just to see even if they are sincere or not".
3			- For recommending reading (but has never approached staff for this support personally).	- For technical troubleshooting.	- Clarity of support: "sometimes computers are faster....but not always clear."
4		- To find materials and save time. - To find items which are missing or lost.			
5	- For replenishing photocopier paper. - To return DVDs.	- To help find items which cannot be found personally. Location of staff for directional support is unhelpful (no staff on underground floor).			- They are "definitely useful". - "I'd rather use the computer...and the staff would use the computer so why not do it myself?"

Appendix G – Coding of online focus group data

G.1   Axial coding

Axial Code	Axial Code Definition	Relationship to Example Open Codes
(Q1) Generational traits and characteristics		
Attitudes	Attitudes exhibited by Millennials	impatience, lazy, blame, others, lack, of, personal, responsibility, attitude
Expectations	Expectations of Millennials compared with previous generations	high expectations, keeping current with technology, expectation for immediacy, career planning, communication preference, convenience, learning preferences, individualised instruction, choice in use of technology
Experiences		dependence on technology, greater freedom, greater access to information, independence, empowerment, negative impact of technology, risks in using technology
Generational traits	Personality traits shared by Millennials	ambitious, tolerant, self-identifies with trait, distanced from observed trait, generational comparison, lifestyle, non-conformity, apathetic, materialistic
Social	Social interactions	social change, email, social networking, texting, maintaining relationships, establishing relationships, collaboration
Society	External influences, in the form of societal pressures and change, exerted on Millennials	pervasive influence of technology, influence of technology, societal change, loss of privacy, global awareness, loss of control, egalitarian effect of technology, better educated
Study behaviour	Approach to learning by Millennials	low print readership levels, last minute studying
(Q2) Internet use		
Arts and entertainment	Media accessed for the purposes of entertainment	online radio, video, downloading music
Honesty	The extent to which the portrayal of an individual's identity online is honest and accurate	selective presentation of image online, honesty online, social pressure, dishonesty online
Identity	The manner in which an individual's identity is presented online	consistent identity, anonymity, desire to be unique
Information-seeking	Using the Internet to find, retrieve, and consult information	online maps, finding information, personal research, use a search engine

Methods of communication	Methods for communicating in a digital environment	communication preference, email, online forums, feedback and reviews
Money and finance	Web content used to engage in financial activities	online banking, money advice and support
News	News	social bookmarking, read newspaper online
Online behaviour	The manner in which individuals conduct themselves online	openness, reduced accountability, online etiquette
Professional	Web content used to engage in professional activities	professional networking
Scholarly activity	Web content used to support scholarly activity, including university work	online encyclopedia, access lecture notes, scholarly activity, work on assignments, student portal, accessing e-resources
Shopping	Online shopping and other consumer activities	shopping, consumer choice, purchasing technology
Social	Social interactions using the Internet	maintaining relationships, social networking, establishing relationships
Travel	Internet use in support of making travel arrangements	book holidays, arrange transport
Weather	Internet use for weather forecasts	check the weather
(Q3) Library use / (Q4) Improving the library		
Conducive to study	Library use based on an atmosphere conducive to study	work on assignments, university study, not conducive to study, conducive to study, collaboration
Financial reasons	Financial implications associated with library use	prohibitive costs of buying books, free of charge
IT provision	Library use based on IT use	computing facilities, email, reprographic facilities, printing facilities
IT support	The library as a source of IT support	help with IT
Library design	Physical aspects of the library layout and design	library space, comfort, toilet facilities, refreshment facilities, temperature, layout and design
Non-scholarly collections	Library use based on non-scholarly provision	fiction collection, reading for general interest, DVDs
Physical access	Implications for physical access to library buildings, facilities and collections	convenience, inconvenience, access to facilities, Internet access, 24-hour opening, better marketing, self-service provision, opening hours, loan restrictions, availability of books, weekend staff
Policies	The effect of policies and procedures on library use	library fines, fines not a deterrent, book reservations
Scholarly collections	Library use based on a need to access scholarly collections	good selection of academic books, books, journals, course materials, subject-specific resources, more copies of material
Social role	The potential to extend the library's role to non-scholarly, social, activities	support social events, group activities, social role
Study space	Accommodation for different methods of learning	quiet zone, group zone, private study rooms, group study rooms, preference for quiet study, AV provision

Subject support	Provision of subject knowledge and support, e.g. bibliographic instruction	skills workshops, faculty librarian, research support, help with referencing, specialist subject support
(Q5) Importance of library staff		
Access to stock	Materials accessed or available only through library staff on request	access to restricted material, loan services, obtain interlibrary loans, access to reservations
Customer service	Overall experience of interacting with library staff during a transaction	egalitarian treatment, approachability, friendliness, unfriendly, poor customer service, variable service, satisfaction
Helpfulness	The helpfulness, and ability to help, of library staff	help new users, lack of willingness to help, willingness to help, Sincerity, clarity of support
IT support	Providing guidance and advice on the use of IT facilities	instructional support for machines, PIN support, help with PCs, help with printing, lack of IT knowledge, IT support
Locating material	Assistance with locating material, including OPAC searches and physical shelf-checking	locating books, locating journals, save time, searching for missing items
Policies and procedures	Role of library staff in relation to, and responsibility for implementing, policies and procedures	replenishing paper supplies, information about fines, information about loan periods, lost property, enforcing policies
Relevance	Perceptions of the relevance of library staff	no longer relevant, becoming obsolete, preference for self-service, staff as a safety net
Subject support	Provision of subject knowledge and support, e.g. bibliographic instruction	specialist subject support, finding references, suggested reading, library workshops, help with e-journals
Troubleshooting	Fixing IT problems including printers and PCs	problems with machines, request a technician
Using the library	General guidance for using the library (e.g. classification scheme)	knowledge of organisation of information, using student dissertations

Table G.1. Relationship of prominent open codes to axial codes.

G.2 Selective coding

Selective Code (Higher Level Code)	Selective Code Definition	Relationship to Axial Codes
(Q1) Generational traits and characteristics		
Behaviour	Actions and behaviour resulting from generational traits and characteristics	Attitudes Social Study Behaviour
Outlook	The outlook of Millennials resulting from expectations and generational traits	Generational Traits Expectations
Upbringing	External influences on Millennials	Experiences Society
(Q2) Internet use		
Communication	The use of the Internet as a medium for communication	Methods of communication Professional Social
Current Affairs	Maintaining awareness of current events and news enabled by the Internet	News Weather
Image presented online	Online identity and the presentation of one's self in a digital environment	Honesty Identity Online behaviour
Leisure	Internet use for leisure purposes	Arts and Entertainment Money and Finance Shopping Travel
Study	Internet use for scholarly purposes whether university-related or for personal research	Information-seeking Scholarly activity
(Q3) Library use / (Q4) Improving the library		
Access	Implications of access in determining, or improving, library use	Financial Physical Access Policies
Environment	The library as place – aspects of the physical library environment	Conducive to study Library design Study space
Resources	The provision of resources and facilities	IT provision Non-scholarly collections Scholarly collections
Support	The provision of support to library users	IT support Subject support Social role
(Q5) Importance of library staff		
Affect of service	Interactions between Millennials and library staff	Customer service Helpfulness Relevance
Directional	The provision of directional support by library staff	Locating material Using the library
Procedural	The provision of procedural support by library staff	Access to stock Policies and procedures
Subject support	The provision of subject support by library staff	Subject support
Technical support	The provision of technical support by library staff	IT support Troubleshooting

Table G.2. Relationship of axial codes to selective codes.

Appendix H – Web-based survey of subject librarians

A. Respondent information

The following questions relate to your current job circumstances and qualifications. It would be very helpful if you could answer all of the questions including questions which may appear depending on your answers.

* Consent: By ticking this box you acknowledge that you have understood the purpose of this survey and consent to taking part

☐ I confirm and agree

---

* 1: At which University are you currently employed?

2: What is your official job title?

3: How many years have you been in your current post?

4: Have you obtained an academic library/information qualification?

☐ Yes

☐ No

[Only answer this question if you answered 'Yes' to question '4 ']
4a: Please provide the details of your qualification:
Provider: please provide the name of the awarding institution (i.e. the library school/university you attended);
Course title: please provide the title/subject of the qualification you have obtained (e.g. Librarianship, Information Science, Business Information Management);
Level/Award: please indicate the type of award you received (e.g. NVQ, Diploma, BA, BSc, MA etc.);
Mode of study: please indicate how you obtained your qualification (e.g. part-time, full-time, distance learning etc.).

Provider:

Course title:

Level/Award:

Mode of study:

Year completed:

[Only answer this question if you answered 'Yes' to question '4 ']
4b: Was your course/programme accredited by the Chartered Institute of Library & Information Professionals (CILIP) or one of its predecessor bodies (i.e. LA or IIS) at the time of study?

☐ Yes

☐ No

5: Do you hold a formal teaching qualification?

☐ Yes

☐ No

[Only answer this question if you answered 'Yes' to question '5 ']
5a: Please provide the details of your qualification:

Provider: please provide the name of the awarding institution;
Course title: please provide the title/subject of the qualification you have obtained;
Level/Award: please indicate the type of award you received (e.g. CertEd, PGCE, BA, MA etc.);
Mode of study: please indicate how you obtained your qualification (e.g. part-time, full-time, distance learning etc.).

Provider:	
Course title:	
Level/Award:	
Mode of study:	
Year completed:	

[Only answer this question if you answered 'No' to question '5 ']
5b: Are you considering obtaining a formal teaching qualification?

☐ Yes

☐ No

B. Role

The following questions relate to your current role. It would be very helpful if you could complete all of the questions, and provide any additional information using the comment fields where appropriate.

6: Which subject area(s) do you support? Please choose *all* that apply:

☐ Social Sciences

☐ Physical Sciences and Engineering

☐ Health, Medical and Life Sciences

☐ Arts and Humanities

7: For the following list please:

a. Self-assess your knowledge and skills using the scale provided;
b. Indicate which <u>one</u> of the sources of training/development you feel <u>most</u> contributed to your current level of understanding.

<u>**Please note that all items in this question refer to your work with, in support of, and in relation to undergraduates only.**</u>

What the scales mean:

<u>*Level:*</u>
1 = Novice: no practical experience
2 = Apprentice: requires supervision in application, and support for developing the skill further
3 = Practitioner: able to practice with minimal supervision
4 = Leader: able to practice without supervision and can help others apply the skill
5 = Expert: demonstrates outstanding performance; recognised as an authority within the organisation and could create an environment to develop the skill.

<u>*Source:*</u>
1 = Acquired on own initiative outside of work or current role
2 = On-the-job development (e.g. through experience, coaching/mentoring etc.)
3 = Short course (e.g. one/two-day course, ECDL etc.)
4 = Other extended educational programme (e.g. non-library diploma or degree, CertEd etc.)
5 = Professional library/information programme (e.g. BA/MA Librarianship etc.)

* 7a: Information environment:

	Level						Source				
	1 - Novice	2	3	4	5 - Expert		1 - Own initiative	2	3	4	5 - LIS programme
Awareness of developments in higher education	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Knowledge of learning preferences	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Sharing best practice with external organisations	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐

* 7b: Information architecture:

	Level						Source				
	1 - Novice	2	3	4	5 - Expert		1 - Own initiative	2	3	4	5 - LIS programme
Awareness of emerging technologies	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Knowledge of curricula in the area(s) you support	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Knowledge of relevant subject information resources	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐

* 7c: Organising information:

	Level						Source				
	1 - Novice	2	3	4	5 - Expert		1 - Own initiative	2	3	4	5 - LIS programme
Creating or editing webpages	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Creating resources for a VLE	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Application of subject knowledge to answer queries	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐

* 7d: Assessing and evaluating services:

	Level						Source				
	1 - Novice	2	3	4	5 - Expert		1 - Own initiative	2	3	4	5 - LIS programme
Familiarity with quantitative research methods	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Familiarity with qualitative research methods	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Delivering customised solutions based on user needs	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐

* 7e: Personal and interpersonal skills:

	Level						Source				
	1 - Novice	2	3	4	5 - Expert		1 - Own initiative	2	3	4	5 - LIS programme
Providing a customer-focused service	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Problem solving	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Communication	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐
Teamwork	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐

	Level					Source				
	1 - Novice	2	3	4	5 - Expert	1 - Own initiative	2	3	4	5 - LIS programme
Teaching basic information skills (e.g. catalogue use etc.)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Teaching advanced information skills (e.g. referencing etc.)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Teaching effective Internet use (e.g. using Google etc.)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Teaching specialist ICT skills (e.g. using bibliographic software etc.)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

7g: In which three items from the twenty listed in questions 7a-7f above do you feel most confident in your ability?

Please rank in order from 1-3 where 1 = most confident

☐ Awareness of developments in higher education

☐ Knowledge of learning preferences

☐ Sharing best practice with external organisations

☐ Awareness of emerging technologies

☐ Knowledge of curricula in the area(s) you support

☐ Knowledge of relevant subject information resources

☐ Creating or editing webpages

☐ Creating resources for a VLE

☐ Application of subject knowledge to answer queries

☐ Familiarity with quantitative research methods

☐ Familiarity with qualitative research methods

☐ Delivering customised solutions based on user needs

☐ Providing a customer-focused service

☐ Problem solving

☐ Communication

☐ Team-work

☐ Teaching basic information skills (e.g. catalogue use etc.)

☐ Teaching advanced information skills (e.g. referencing etc.)

☐ Teaching effective Internet use (e.g. using Google etc.)

☐ Teaching specialist ICT skills (e.g. using bibliographic software etc.)

7h: In which three items from the twenty listed in questions 7a-7f above do you feel least confident in your ability?

Please rank in order from 1-3 where 1 = least confident

☐ Awareness of developments in higher education

☐ Knowledge of learning preferences

☐ Sharing best practice with external organisations

☐ Awareness of emerging technologies

☐ Knowledge of curricula in the area(s) you support

☐ Knowledge of relevant subject information resources

☐ Creating or editing webpages

☐ Creating resources for a VLE

☐ Application of subject knowledge to answer queries

☐ Familiarity with quantitative research methods

☐ Familiarity with qualitative research methods

☐ Delivering customised solutions based on user needs

☐ Providing a customer-focused service

☐ Problem solving

☐ Communication

☐ Team-work

☐ Teaching basic information skills (e.g. catalogue use etc.)

☐ Teaching advanced information skills (e.g. referencing etc.)

☐ Teaching effective Internet use (e.g. using Google etc.)

☐ Teaching specialist ICT skills (e.g. using bibliographic software etc.)

7i: Which three items from the twenty listed in questions 7a-7f above are most important to your current role?

Please rank in order from 1-3 where 1 = most important

☐ Awareness of developments in higher education

☐ Knowledge of learning preferences

☐ Sharing best practice with external organisations

☐ Awareness of emerging technologies

☐ Knowledge of curricula in the area(s) you support

☐ Knowledge of relevant subject information resources

☐ Creating or editing webpages

☐ Creating resources for a VLE

☐ Application of subject knowledge to answer queries

☐ Familiarity with quantitative research methods

☐ Familiarity with qualitative research methods

☐ Delivering customised solutions based on user needs

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- [ ] Providing a customer-focused service
- [ ] Problem solving
- [ ] Communication
- [ ] Team-work
- [ ] Teaching basic information skills (e.g. catalogue use etc.)
- [ ] Teaching advanced information skills (e.g. referencing etc.)
- [ ] Teaching effective Internet use (e.g. using Google etc.)
- [ ] Teaching specialist ICT skills (e.g. using bibliographic software etc.)

7j: Which three items from the twenty listed in questions 7a-7f above are least important to your current role?
Please rank in order from 1-3 where 1 = least important

- [ ] Awareness of developments in higher education
- [ ] Knowledge of learning preferences
- [ ] Sharing best practice with external organisations
- [ ] Awareness of emerging technologies
- [ ] Knowledge of curricula in the area(s) you support
- [ ] Knowledge of relevant subject information resources
- [ ] Creating or editing webpages
- [ ] Creating resources for a VLE
- [ ] Application of subject knowledge to answer queries
- [ ] Familiarity with quantitative research methods
- [ ] Familiarity with qualitative research methods
- [ ] Delivering customised solutions based on user needs
- [ ] Providing a customer-focused service
- [ ] Problem solving
- [ ] Communication
- [ ] Team-work
- [ ] Teaching basic information skills (e.g. catalogue use etc.)
- [ ] Teaching advanced information skills (e.g. referencing etc.)
- [ ] Teaching effective Internet use (e.g. using Google etc.)
- [ ] Teaching specialist ICT skills (e.g. using bibliographic software etc.)

8: In which of the following areas have you experienced education, training or formal development?

Please choose *all* that apply:

☐ Teaching and learning theories

☐ Teaching techniques

☐ Information literacy concepts

☐ User needs assessment

☐ Web-based teaching strategies

☐ Outcomes evaluation

9: How often do you assess user needs?

[ ]

10: What methods do you use to assess user needs?

[ ]

11a: On average, how many hours a week do you spend preparing and delivering teaching sessions to undergraduates?

[ ]

11b: What is the context of the teaching you undertake?
Please choose *all* that apply:

☐ Via stand-alone VLE modules

☐ Via VLE modules embedded in the curricula

☐ Production of guides/training materials

☐ On-the-spot

☐ Face-to-face sessions with small groups (0-20 students)

☐ Face-to-face sessions with large groups (21+ students)

☐ Pre-arranged 1-to-1 instruction

Other: [ ]

12: How many hours a week do you spend in contact with undergraduates using the following methods? If you do not use a particular method simply enter '0' hours. Please round up to the nearest whole hour.

Enquiry desk (on-the-spot):

Pre-arranged 1-to-1 appointments:

Committees/meetings:

Email:

Instant messaging (e.g. MSN Messenger, AIM etc.):

Social networking tools (e.g. FaceBook, MySpace etc.):

13: Of the methods which you use from the list above; which three do you find to be the most productive?
Please rank in order from 1-3 where 1 = most productive

- Enquiry desk (on-the-spot)
- Pre-arranged 1-to-1 appointments
- Committees/meetings
- Email
- Instant messaging (e.g. MSN Messenger, AIM etc.)
- Social networking tools (e.g. FaceBook, MySpace etc.)

14: Of the methods which you use from the list above; which three do you find to be the easiest to use?
Please rank in order from 1-3 where 1 = easiest to use

- Enquiry desk (on-the-spot)
- Pre-arranged 1-to-1 appointments
- Committees/meetings
- Email
- Instant messaging (e.g. MSN Messenger, AIM etc.)
- Social networking tools (e.g. FaceBook, MySpace etc.)

* 15: How easy, overall, do you find it to communicate with undergraduates?

1 - Difficult	2	3	4 - Easy
☐	☐	☐	☐

* 16: How productive, overall, do you feel your communication is with undergraduates?

1 - Unproductive	2	3	4 - Productive
☐	☐	☐	☐

* 17: How would you rate your relationship with undergraduates?

1 - Poor	2	3	4 - Good
☐	☐	☐	☐

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* 18: How valuable do you feel the following resources are for supporting undergraduate study?

	1 - Not at all valuable	2	3	4 - Highly valuable	Don't know/never used
Library catalogue	☐	☐	☐	☐	☐
Virtual learning environment	☐	☐	☐	☐	☐
Subject gateways (e.g. INTUTE)	☐	☐	☐	☐	☐
Printed books	☐	☐	☐	☐	☐
Printed journals	☐	☐	☐	☐	☐
Printed (prepared) course packs	☐	☐	☐	☐	☐
E-Books	☐	☐	☐	☐	☐
E-Journals	☐	☐	☐	☐	☐
E-offprints/course packs	☐	☐	☐	☐	☐
Electronic databases	☐	☐	☐	☐	☐
Search engines	☐	☐	☐	☐	☐
Google Scholar	☐	☐	☐	☐	☐
Wikipedia	☐	☐	☐	☐	☐

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* 19: How effective do you feel the following methods are for supplying library information to undergraduates?

	1 - Not at all effective	2	3	4 - Highly effective	Don't know/never used
Printed library guides	☐	☐	☐	☐	☐
Library website/online guides	☐	☐	☐	☐	☐
RSS feeds	☐	☐	☐	☐	☐
Blogs	☐	☐	☐	☐	☐
Wikis	☐	☐	☐	☐	☐
Social networking tools (e.g. FaceBook, MySpace)	☐	☐	☐	☐	☐

20: Do you feel your role has changed while you have been in your current post, and if so in what ways has it changed?

C. Survey Feedback

It would be helpful if you could provide some feedback on your experience completing this survey by answering the questions below.

21: How long (in minutes) did it take for you to complete this survey?

> [   ]

22: Did you feel that all of the questions were clearly expressed?

☐ Yes

☐ No

[Only answer this question if you answered 'No' to question '22 ']
22a: Which questions did you feel were not clear, and why was this the case?

> [   ]

23: If you have any final comments on the survey please write them below:

> [   ]

Submit your survey.
Thank you for completing this survey. Please submit by 2009-05-10.

Appendix I – Additional results from the web-based survey of subject librarians
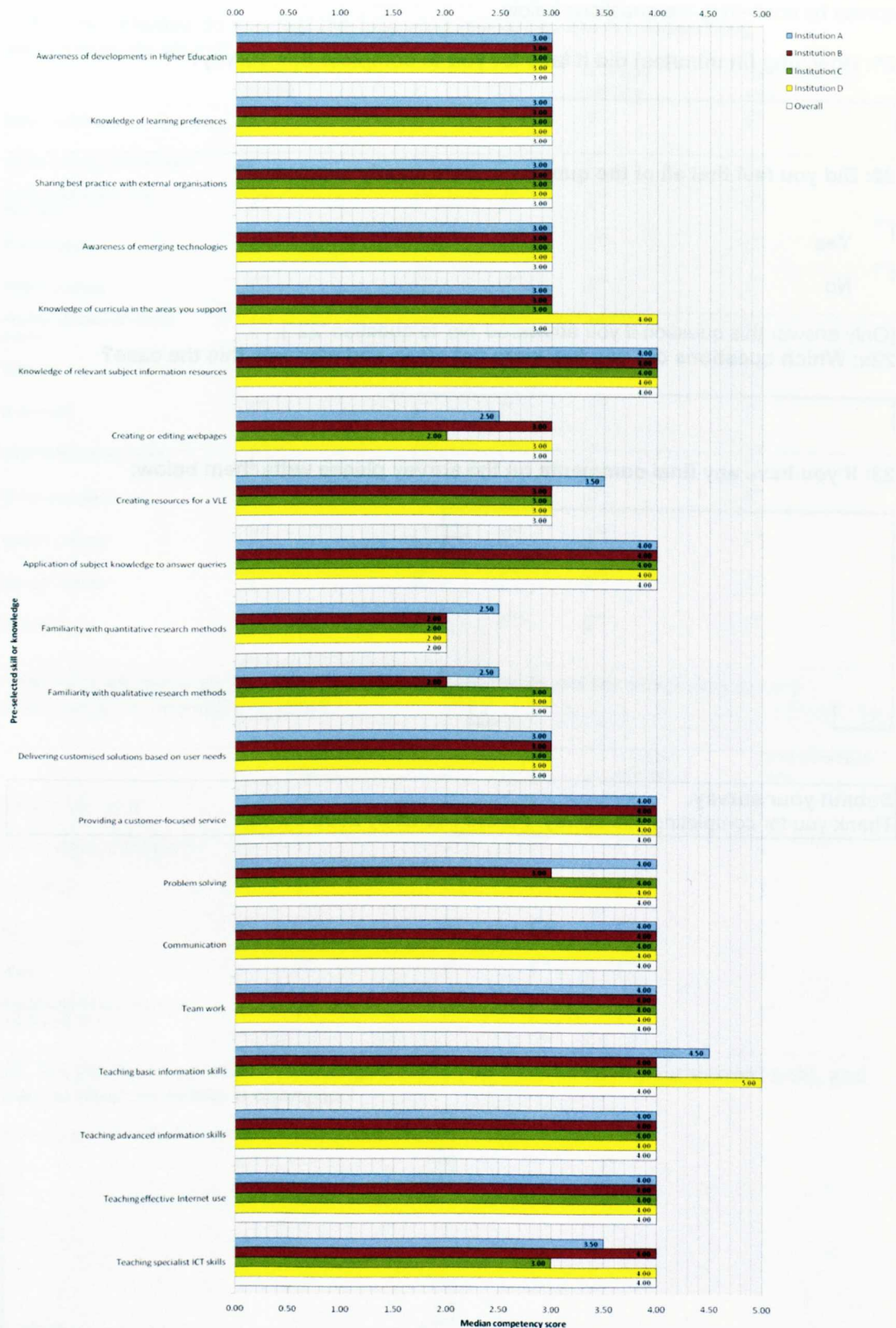
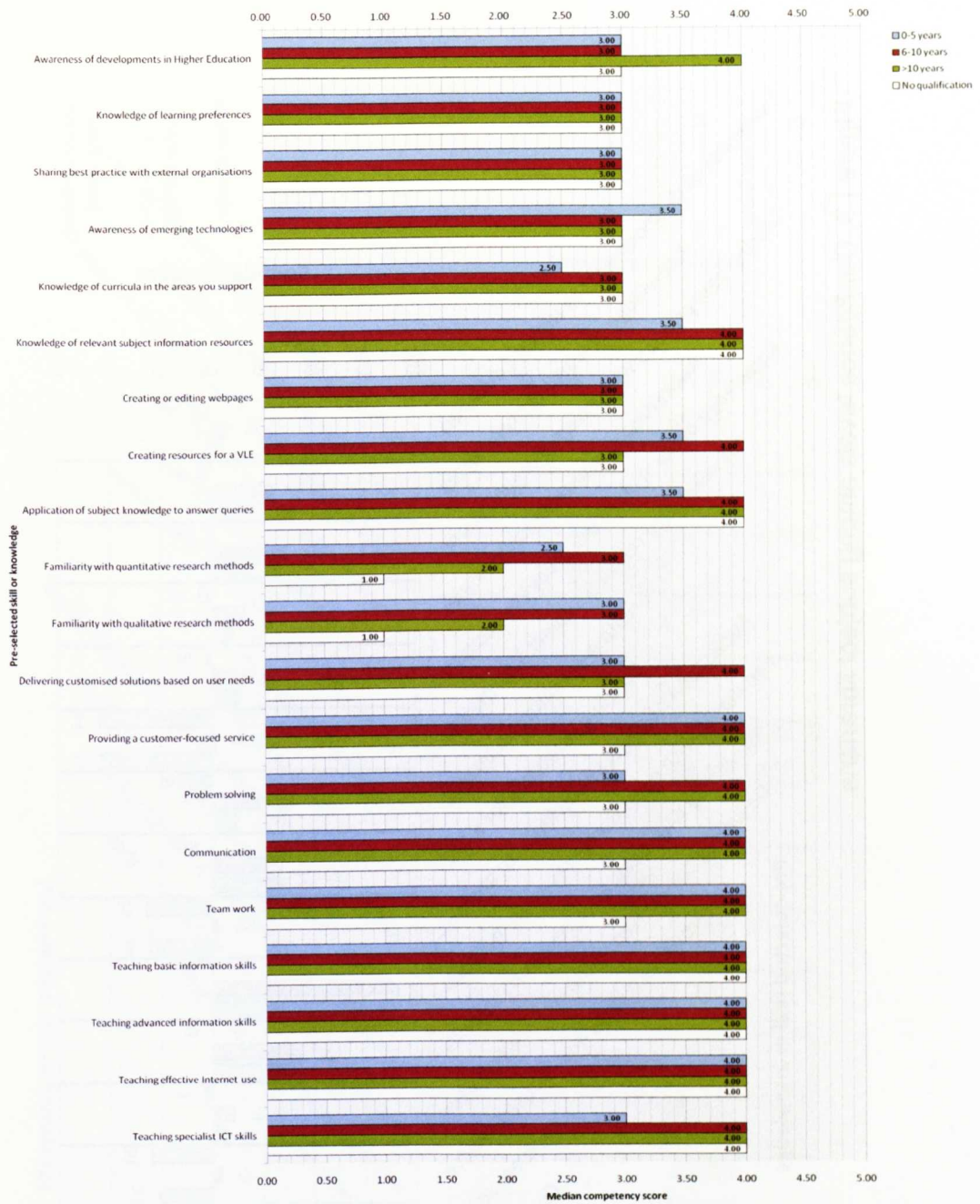Figure I.1. Central tendency of competency levels among subject librarians.

Figure I.2. Central tendency of competency levels among subject librarians by age of academic library/information qualification.
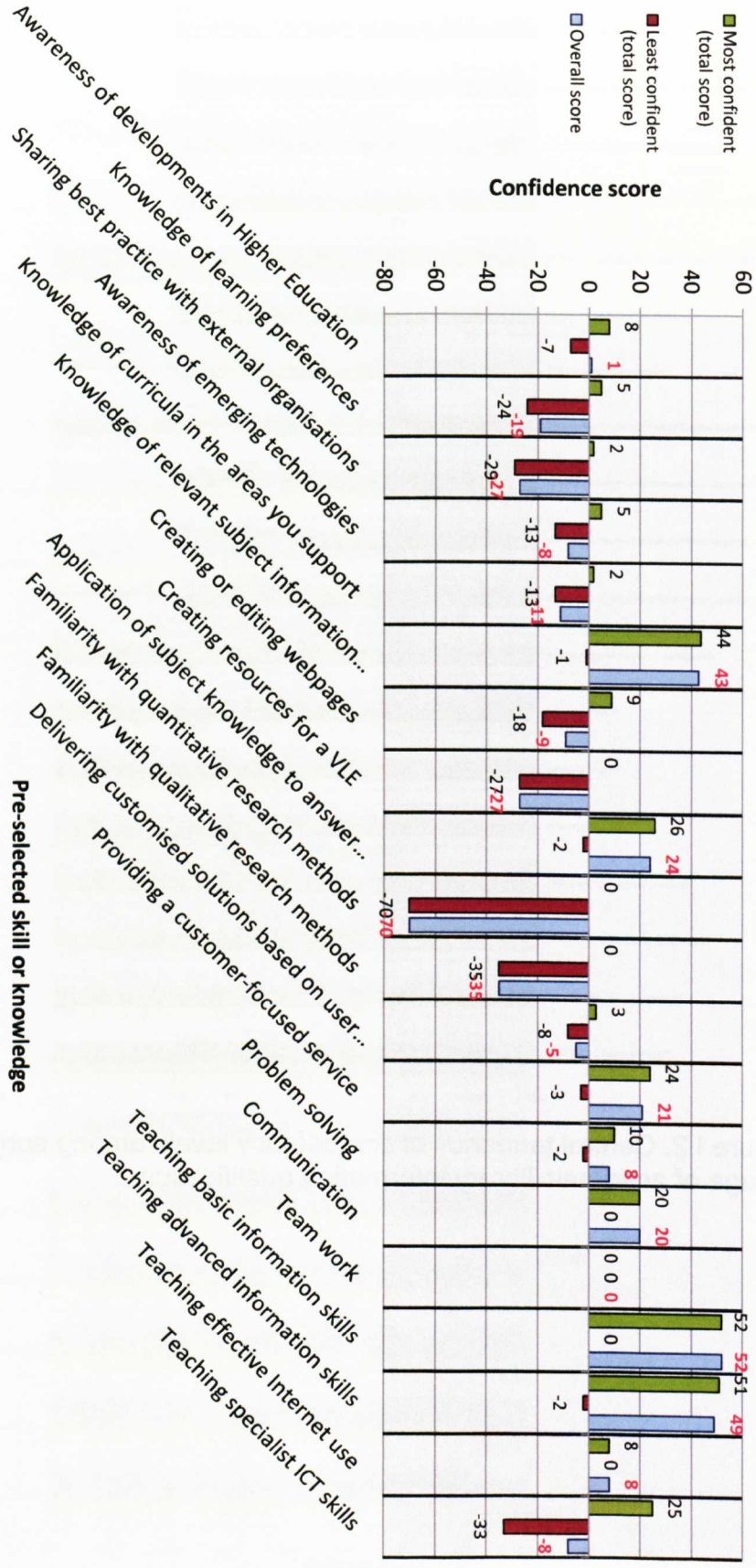
Figure I.3. Confidence levels among subject librarians.
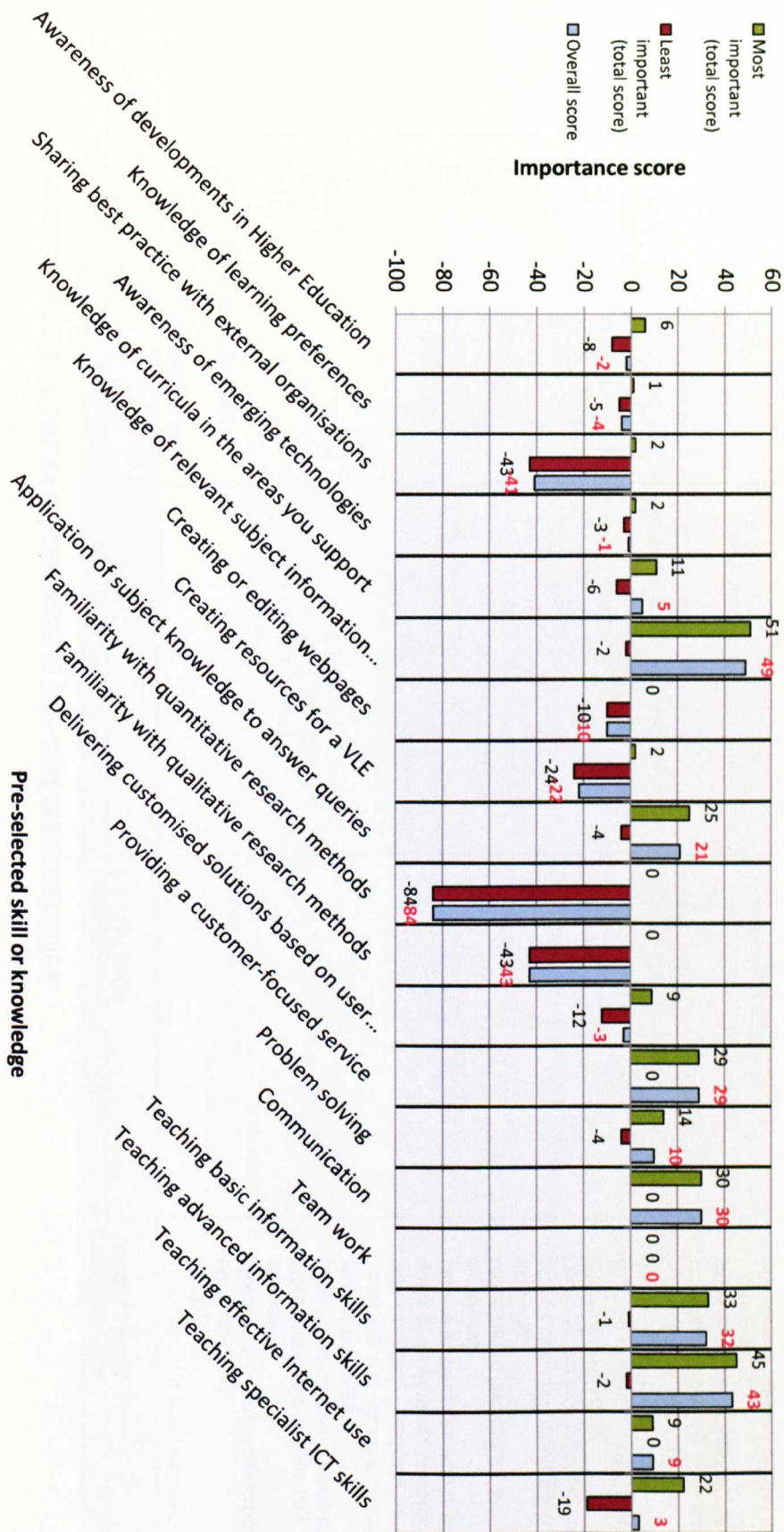
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Figure I.4. Perceived importance of skills and knowledge to the current role of respondents.

Table I.1. Thematic analysis of perceived changes to role and responsibilities.

Category	Institution A	Institution B	Institution C	Institution D
Response Rate	8/12 (66.67%)	8/9 (88.89%)	8/13 (61.54%)	14/19 (73.68%)
A (13)	- "Teaching requirements have expanded". - "More face-to-face teaching".			- "The teaching role has been reinforced". - More teaching. - More time in formal teaching sessions. - More emphasis on teaching (other aspects taken on by other staff or computers). - Teaching and learning is now task-oriented – students want quick and relevant solutions. - Library training has had to be simplified. - More varied techniques for teaching. - More teaching – moving towards covering general skills as well as information literacy. - Blurring of boundaries between teaching staff and library staff. - "I'm not sure I would feel confident delivering a generic skills session...without some more training". - Introducing pedagogic teaching methods into practice.

B (30)	- Additional skills to support teaching via VLE. - VLE has become more important. - Taken on web-editing and ICT support role. - Personal contact [with students] is more limited "as more time is spent electronically". - More email enquiries. - Harder to see what students are doing when searching DBs. - New technology – always need to keep investigating. - More user emails and fewer 1-2-1 enquiries. - Need to keep up-to-date with new technologies. - "Shift towards e-resources and pressure to use VLE"	- Advent of Web 2.0 technologies: "we are on the verge of using these... but have not explored too far yet". - Strong email culture. - More time spent distinguishing e-resources from free Internet resources. - Developing e-book collections. - "Everything now computer based/supported by computers". - Need to support users remotely. - Means of supporting students diversifying all the time. - ICT expanding range of methods for communicating with students (web pages, electronic enquiry service). - Exploring Web 2.0 technologies. - "Increased use of technology". - Changes to interaction with undergraduates.	- "I think we are fighting an (on-going) losing battle with the Internet, especially Google Scholar...". - "Technology" has changed role. - More ways of communicating with students (e.g. Twitter, FaceBook, Second Life, sms). - Use of technology to deliver teaching (e.g. Articulate, voting software). - Use of Web 2.0 applications for supporting info literacy instruction/teaching not yet developed (e.g. Twitter, Facebook).	- Greater use of e-resources alongside, not in place of, print materials. - VLE has standardised some processes and improved communication. - "I feel a sense of obligation to try emerging technologies even though pedagogically I think some of them are inappropriate". - More involvement delivering material via VLE.
C (6)	- More contact with members of the department. - "I feel that I am one of the team". - Working more with other academic support departments in University.		- Restructuring of department (January 2008) changed role [no elaboration]. - The "ethos of the University".	- Less autonomy (resulting from role evaluation).

D (12)	- "Understanding among [UGs] of the structure of information – especially periodical literature – has declined". Greater need for info literacy instruction. - "More info skills training"	- More emphasis on information literacy. - Educating students about plagiarism and referencing. - More emphasis on enabling students to become effecting searchers. - Increasing need to help students become more expert and discriminating in searching and use of resources.	- Undergraduates arrive from school with lower levels of general literacy as well as information literacy skills. - Need for information skills training (esp. In resource evaluation) is "stronger than ever amongst undergraduates". - "Users want information more quickly and only in electronic form". - Increased consumerism. - Literature searching is now taught to undergraduates. - Beginning to incorporate wider critical thinking and academic skills.
E (1)	- Changes to copyright licensing (e.g. scanning content into VLE).		
F (4)		- "The service has moved from a very academic theme to a service role". - Subject specialism eroded in favour of customer service focus (quick answers, quick fixes). - Presence of subject staff on enquiry desk for general duties (fines, basic queries) diluting specialist support (students now unaware it is available).	- Enquiries now primarily routine (e.g. fines).

G (4)		- Timetabling difficulties trying to incorporate new info literacy instruction role.	- "Much busier with more pressure of work". - Too busy to develop new skills or subject expertise. - Academics don't allow enough time for scheduled library induction.
H (8)	- "Has not changed".	- "No real change". - "No major changes".	- "No".	- "No". - "No". - "Only been in post one year" [i.e. 'no']. - "Only been in this post for a little over a year so not much has changed so far!" [i.e. 'no'].

Key:

A   Teaching
B   Impact of ICT
C   Organisational change
D   Information literacy
E   Legal/social aspects
F   Customer service focus
G   Workload
H   No change

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Appendix J – Participant information sheet for web-based survey of Millennials

The University Of Sheffield.

University of Sheffield, Department of Information Studies
An investigation into the impact of the Millennials Generation on library services

About the project
This research aims to identify the expectations and experiences of students aged 18-24 (labelled as members of the Millennials Generation) in relation to academic library use.
It is being undertaken as part of a doctoral project at the Department of Information Studies, University of Sheffield, but the data collected may be used to inform the future development of library services.

What is required
1. All you need to do is fill in the questionnaire truthfully to describe how you go about studying, how you use the Internet, and what you think about the services offered to you by your university library. The word 'library' here also covers information and learning resource centres.
2. If you agree to participate, you will need to spend around 20 minutes completing this online web-based questionnaire. There are 27 questions altogether. You will be able to save your responses at any time and return to the survey when it is convenient for you.
3. The first page of this survey also asks you to confirm that you have understood the purpose of this survey and agree to participate.

Confidentiality
All the information collected about you during the course of the research will be kept strictly confidential. You will not be identified in any reports or publications.

Contact
If you have any queries or concerns about this research, please contact either:

the project researcher, Stephen Tapril
(email: s.tapril@sheffield.ac.uk, tel 0151 625 5967) or

the researcher's supervisor, Professor Sheila Corrall
(email s.m.corrall@sheffield.ac.uk, tel 0114 222 2632)

next >>
Load Unfinished Survey

Appendix K – Participant information sheet for online focus groups

Introduction

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

The purpose of this project

This research is being undertaken to identify the expectations and experiences of undergraduate students aged 18-24 (labelled as members of the 'Millennials Generation') in relation to academic library use. The project aims to devise strategies for meeting the needs of these students in the library context, with specific reference to service provision and the skills and competencies of professional library staff.
The study is being undertaken as part of a doctoral student research project at the Department of Information Studies, University of Sheffield.
If you would like a detailed list of the specific aims and objectives of the project then please ask.

Why have I been chosen?

You have been selected for two reasons:
1. You are aged between 18-24 and are therefore a member of the 'Millennials Generation';
2. You are a university undergraduate attending one of the institutions selected for this study;
There will be up to five other participants (a maximum of six in total) selected for the online focus group session including yourself if you agree to take part.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and you can still withdraw at any time without it affecting any benefits that you are entitled to in any way. You do not have to give a reason.

What will happen next?

If you agree to participate you should be aware that you will need to spend one to two hours of your time taking part in an informal web-based focus group which will explore some of the issues examined in research so far. The

focus group will be conducted via the Internet, using a website and interactive 'chat' software.

What do I need to do?

If you agree to take part then you will be given the address of the website, a username and a password to log in to the chat service, and an outline of the questions which will be asked. All you need to do is read through the questions and bring some ideas, and an open mind, with you to the session. By logging in to the online focus group session you acknowledge that you have understood the purpose of this research and consent to taking part. The session will concentrate on your use (or non-use) of your university library service and the things you feel define you and your age group (generation). All participants are encouraged to speak their mind and share views within the group about the issues raised, mindful about respecting the other participants. A transcript of the conversation will be recorded automatically in a secure database and only the focus group facilitator will have access to this. The facilitator will be guiding discussion in order to keep it 'on topic'.

The possible benefits of taking part

All participants in focus groups from all the universities taking part will be entered into a prize draw for a £20 HMV voucher. Aside from this specific benefit the outcomes of the research project will be communicated to library service managers who may decide to implement positive changes based on the contributions you have made.

What happens if there is a change in arrangements?

If a participant selected for the study is unable to attend then a replacement will be found. It is possible that a focus group session may take place with fewer than the six participants envisaged for the purposes of the study. If a session has to be cancelled for any reason then all participants will be contacted and an alternative arrangement sought. Participants have the right to withdraw from the project at any stage.

What if I wish to complain?

If you are unhappy with the way you are treated during the focus group session for any reason, then you should address your complaint in writing to the project supervisor: Professor Sheila Corrall, Department of Information Studies, Regent Court, 211 Portobello Street, Sheffield. S1 4DP.
If you are unsatisfied with the way any complaint is handled then you are welcome to contact the University's Registrar and Secretary.

Your right to confidentiality

All the information that will be collected about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications.

What will happen to the results?

Findings of the research will be incorporated into the overall project thesis and may also be included within other publications. Transcripts may be provided in full, but participants will not be identified in any way (by name or other attributes) within these. To reiterate: participants will be guaranteed anonymity in the publication of findings.

Ethical review and scrutiny

This project has been ethically approved via the Department of Information Studies ethics review process. The University's Research Ethics Committee monitors the application and delivery of this review process across all departments.

Contact details

If you would like to discuss the project further, including any aspect of your participation:

Researcher's email: s.tapril@sheffield.ac.uk
Researcher's telephone number: 0151 625 5967
Supervisor's email: s.m.corrall@sheffield.ac.uk
Supervisor's telephone number: 0114 222 2632

You will be given a copy of this information sheet and a copy of your signed consent form to keep.