The Feedback Experience of Saudi Arabian Medical Students and Tutors in PBL Medical Curricula: A Mixed Method Study

By

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Abstract

Background

Even though there is extensive literature about good practice in feedback, there is very little research investigating what influences its quality within problem-based learning (PBL) settings. Particularly within Saudi Arabian educational environments, there are unique considerations, such as a tutor-centred approach to learning. Southern theory advocates approaches to developing good practice by considering the needs of such local contexts, and not passively adopting prior work.

Aim

This project explored students' and tutors' experiences of the feedback process within PBL settings in the local context of Saudi medical schools, specifically investigating factors that influence its quality.

Method

A mixed methods approach was adopted. First, 856 students from 11 medical schools completed a survey. Then, in four schools, 12 student focus groups and 11 tutor semi-structured interviews were conducted to further understand the survey conclusions.

Results

Most of the student participants (96.5%) received feedback; however, they were not always satisfied with its quality. Verbal feedback was reported to be the most effective, and multi-source feedback was discussed as the most comprehensive source of feedback. Communicating feedback in the students' native language and students' formative experiences of teacher-centred education were key influential factors affecting feedback experiences. There was a common underlying belief between tutors and students that feedback in PBL is for promoting student-centred learning and developing self-regulation skills; however, these groups differed in their perceptions of what is good practice in feedback.

Conclusion

Even though most student participants receive feedback; their experience is variable, and the quality is inconsistent. Learner and tutor characteristics and beliefs impacts on the feedback process. The key conclusions of the project informed the development of a conceptual framework that should facilitate efforts to improve the quality of feedback experiences. Key aspects of this conceptual framework include fostering self-regulated learning through a scaffolded approach.

Contents

Declaration

I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not previously been presented for an award at this, or any other, university.

The Turnitin Originality report shows that there is a significant match of this submitted thesis with two sources. These matches refer to earlier submissions of parts of this thesis for Confirmation Review (the first source identified by the report with a 17% match) to continue with my doctoral work. The second source refers to the literature review submission during my first year of the doctoral programme as part of my doctoral development programme training (indicates a 7% match).

Glossary of acronyms

AMEE	Association for Medical Education in Europe
ERIC	Education Resources Information Centre
GPA	Grade Point Average
LC	Laparoscopic Cholecystectomy
MSF	Multi-Source Feedback
NCAAA	National Commission for Academic Accreditation and Assessment
NOTSS	Non-Technical Skills for Surgeons scale
OSATS	Objective Structured Assessment of Technical Skills
OSCE	Objective Structured Clinical Examination
OSPE	Objective Structured Practical Examination
PBL	Problem-Based Learning
SDL	Self-Directed Learning
SPSS	Statistical Package for the Social Science
SRL	Self-Regulated Learning
ZPD	Zone of Proximal Development

Chapter 1: Introduction

1.1 Introduction

This is a PhD thesis concerning the feedback process in the context of problem-based learning (PBL) in Saudi medical schools. It targets both active stakeholders of the PBL tutorials: students and tutors. Mixed methods were used including surveys, focus groups and semi-structured interviews.

Boud and Molloy (2013a, p.6) define feedback as:

> "…a process whereby learners obtain information about their work in order to appreciate the similarities and differences between the appropriate standards for any given work, and the qualities of the work itself, in order to generate improved work."

Boud and Feletti (1997, p. 15) define PBL as:

> "…an approach to structuring the curriculum which involves confronting students with problems from practice which provide a stimulus for learning."

Further explanation and discussion of feedback and PBL is in the literature review in chapter two.

1.2 Rationale of the study

PBL curricula is currently used worldwide, including in Saudi Arabia. The main philosophy is based on student-centred learning that fosters self-directed and regulated learning (Barrows and Tamblyn, 1980). Feedback is central to the educational process, and it supports students' development (Boud and Molloy, 2013a). Furthermore, feedback is crucial in the PBL curriculum since students are central to the education process. Without feedback as an important facilitation process, students cannot sufficiently explore their own weaknesses, and expected development may be problematic (Holen, 2000; Boud and Molloy, 2013a)

In a Saudi PBL study conducted by Al-Mously et al. (2014), 43.6% of participants (n=110) believe that feedback quality is poor; none believe it is excellent. Thus, feedback practice in PBL in Saudi medical schools may have shortcomings that should be further examined. This is the focus of this PhD research. The outcomes should contribute to develop future practice of PBL, specifically in Saudi Arabia. To

reach that end, this research explored students' and tutors' viewpoints and perceptions on the feedback process in PBL using a mixed methods approach.

Furthermore, even though there is extensive literature about good practice in feedback, there is very little research investigating what influences quality feedback within PBL settings. Therefore, this PhD study has a rationale that it is exploring the potential factors that influence the feedback process in Saudi PBL medical schools.

Culture is potentially one of the factors. The best practice evidence of feedback in the PBL setting can be influenced by culture. Understanding this factor may explain attitudes and perceptions among tutors and students about feedback to help integrate best practices. This is supported by a study conducted by Jippes et al. (2015) who used Hofstede's framework to examine how national culture can play a role in successful curriculum change in medical schools. They concluded that to develop a curriculum change, understanding the cultural factors are important. Thus, by conducting this PhD research, it is anticipated that positive change in Saudi PBL curriculum, specifically in the aspect of the feedback process, will be achieved.

1.2.1 Medical Education in Saudi Arabia

This research is based on the students' and tutors' experience of the feedback process in PBL. As this research is conducted in Saudi Arabia, this section focuses on providing a content of medical education in Saudi Arabia.

According to Telmesani et al. (2011), medical education in Saudi Arabia passed through two chronological phases. In 1967, the first medical school was established in the capital city Riyadh (in the first phase). The government followed by establishing other medical schools in other cities. Although there were minor differences between those medical schools in that first phase, there was one general theme that represented the educational system of that period: medical education was totally based on teacher-centred learning. In that traditional system, the curriculum was generally shaped by three pre-clinical academic years, followed by another three for clinical training and then one year for internship.

According to Telmesani et al. (2011), the second phase began in the early 2000s when 'concern' began about the disadvantages of the traditional system. Because of that, 'a call for change' came into being. That concern led to innovation in medical education and involved more integrated student-centred

learning curricula, including PBL. By 2018, when this PhD research targeted PBL medical schools, 20 medical schools had established a PBL curriculum.

Moreover, there are some other important features of medical education in Saudi Arabia that should be highlighted in this introduction:

- All medical schools are undergraduate entry and only students who have high grades recently obtained in high schools are admitted to the medical schools.
- In addition, students are involved in two other mandatory examinations (to enter medical school) formed and managed by the National Centre of Assessment in Higher Education: the national aptitude test and the examination of science.
- Most of the medical schools require students to pass an interview in addition to the mentioned examinations.
- Public medical schools are limited for Saudi students while private schools are open for any nationality. This difference has an impact on student demographics, as there are more international students enrolled in private schools than in public ones.
- Each medical school has its own curriculum committee that determines the curriculum content, teaching methods and assessment processes.
- English as a foreign language is the formal language used in Saudi medical education.
- The PBL curriculum is delivered as a three-year pre-clinical phase followed by a three-year clinical phase then by a one-year internship.
- Males and females are segregated in the medical education process in all medical schools in Saudi Arabia.
- There is a Saudi Medical Colleges Deans' Committee that meets biannually to develop the medical education practice in Saudi medical schools.
- Medical schools are required to be accredited by the National Commission for Academic Accreditation and Assessment (NCAAA) to ensure a high quality of education (Alrebish et al., 2017).

1.2.2 Medical Education Research in Saudi Arabia

There is a lack of medical education research in Saudi Arabia. Only 0.2% of Saudi medical research is related to medical education, according to Bin Abdulrahman (2012). In a more recent published paper, gulf countries (including Saudi Arabia) produced little research in the domain of medical education (Meo et al., 2015). Thus, feedback-related research is rare. Without research set in local context, development of medical education could be problematic:

> *'The quality of healthcare depends on the competences of the health professionals who take care of patients. The foundation for their*

> *competences is the quality of the education they received. Often their education takes place in learning environments that have not been objectively evaluated. Medical practice is continuously assessed and improved by research. Similarly, medical education should be evidence based.' (Bin Abdulrahman, 2012, p.1)*

In addition, this study has as its rationale the dominance of Western literature in terms of knowledge creation, based on the concept of Southern theory. This theory was first discussed by Connell (2007). The main premise of this theory is that the production and generation of knowledge and theories are dominated by a limited part of the world, the Western world or 'metropole', as Connell calls it. Connell (2014) explained that intellectuals in colonised societies (periphery) are adapting knowledge generated in the metropole without proper evaluation to local context. This dominance of knowledge application also affects various wealthy peripheral countries such as Australia:

> *'…This is very familiar in academic practice even in a rich peripheral country like Australia. We travel to Berkeley for advanced training, take our sabbatical in Cambridge, invite a Yale professor to give our keynote address, visit a Berlin laboratory, teach from US textbooks, read theory from Paris and try to publish our papers in Nature or the American Economic Review. This pattern is empirically demonstrable; it is named 'academic dependency' by Alatas (2006)' (Connell, 2014, p. 211)*

Connell (2014) believes that there are different cultural contexts and societies in the world that have features differing from the metropole culture. For this reason, Southern theory is believed by Connell (2014) to be 'a challenge to develop new knowledge projects and new ways of learning with globally expanded resources' (p. 210).

In the context of best feedback practices in PBL medical schools, this concept of Southern Theory is also evident. There is a proliferation of literature on feedback; there is a proliferation of literature on PBL and what are best practices in both PBL and feedback, as will be further highlighted in the chapter on the literature review (chapter two). However, there is very little research investigating the topic of the PBL feedback process in the Saudi medical education culture.

Saudi medical educators adapt western literature and research without considering the context and unique feature of the local context. This PhD researcher aims to develop a piece of work that considers the context of Saudi PBL schools, and this is compatible with the concept of Southern theory; that is, that there are different cultural contexts of worldwide PBL feedback that need different knowledge projects.

Therefore, this PhD project has outcome that advance medical education research in Saudi Arabia through two ways. First, this project has a role to look whether the last literature in PBL, which is mainly situated in the western context, applies to Saudi Arabia. This PhD research is targeting a geographical area where culture is a potential influencing factor. Second, by doing this piece of work, the research is challenging other researchers to consider the southern theory notion that research can always just be conducted in one context and every other different contexts just adopt it.

1.3 Research Question

The research question is 'How do different medical students and tutors in Saudi Arabia experience the PBL feedback process?' The question focuses specifically on the modes (verbal vs written), sources (tutor vs peer) and purposes of feedback experienced by students and tutors in Saudi Arabian medical schools.

1.4 Aim and Objectives of the study

This research aims to explore students' and tutors' experiences of the feedback process within PBL settings.

The objectives are to examine:

- Students' and tutors' preferences of modes and sources of feedback within the PBL approach.
- The reasons for such preferences.
- What are the intended purposes of feedback from students and tutors within different settings and what are the reasons for this.

1.5 Outline of the thesis

This PhD thesis contains 10 chapters. This first chapter introduced the topic and the rationale of the study. This will be followed by the second chapter that presents the literature review, which includes three sections: the first is a structured review of the literature in the topic of feedback in higher education. It explains about the importance of feedback in higher education. The second section focusses on the educational theory and development of PBL: the educational context for this thesis. The third section is a scoping review of feedback in PBL. Context matters, and therefore the feedback in PBL contexts deserves special consideration.

After that, methodology is discussed in the third chapter, where the research paradigms and the rationale for this are highlighted. Chapter four presents the method used in this research. The detailed process of this research, including the data collection from surveys, focus groups and semi-structured interviews, is explained.

Chapters five, six and seven include the data analysis and results. The quantitative analysis is shown in chapter five, where the final statistical results, including variable differences and correlations, are presented. Chapters six and seven focus on the qualitative data analysis and the results of students' focus group discussions and tutors' semi-structured interviews, respectively. These three results chapters are followed by a triangulation chapter that highlights the commonalities and differences between the range of data collected, i.e. quantitative and qualitative data, and from different subjects, i.e. students and tutors.

The key results are discussed in chapter nine, where these results are considered in relation to the current literature, and how this study further complements and contributes. Finally, chapter ten is the conclusion, recommendation for future research, implications for PBL medical schools and the researcher's reflection on the research process.

Chapter 2: Literature review

2.1 Introduction

To process the literature review to the fullest, the researcher documented three parts. Part 1 focuses on a structured review that defines the concept of feedback and highlights is importance in the higher education context. Part 2: as the educational context for this thesis is problem-based learning, Part 2 focusses on the educational theory and development of PBL. Finally, Part 3 is Scoping review which explores feedback and PBL in practice, which aims to map the literature in a broad context. The scoping reviews aims to map the literature in a broad context to find knowledge gaps, instead of focusing on a specific research question in the case of a systematic review (Levac et al., 2010). In addition, it does not aim to assess the literature's quality as the main purpose is to find knowledge gaps (Arksey and O'Malley, 2005). These processes helped the researcher to identify the knowledge gap and then to determine the research question.

2.2 Literature Review Part 1: Feedback in Higher Education.

2.2.1 Introduction

This literature review addresses feedback in higher education. The focus of this review is on higher education because the researcher's practice is within the higher education setting. The researcher of this PhD is a lecturer at a medical school in Saudi Arabia. He is interested in feedback in higher education because of its critical role in medical education at his university.

Boud and Molloy (2013, p.6) define feedback as **"a process whereby learners obtain information about their work in order to appreciate the similarities and differences between the appropriate standards for any given work, and the qualities of the work itself, in order to generate improved work"**. According to Sadler (1989), the definition of feedback can be related to its effectiveness, rather than to its informational content. As such, Ramaprasad (1983, p.4) defines feedback as **"information about the gap between the actual level and reference level of a system parameter which is used to alter the gap in some way"**. These definitions, though articulated slightly differently, indicate that

feedback is about giving learners opportunities to close their gaps in the learning process during their learning and development.

So even though a key purpose of feedback is to tell the learner where they need to focus on for improvement, only 50 per cent of feedback included strategies for how to improve (Fernando et al. 2008); thus, feedback practice requires further development. The initial step is to conduct literature review on feedback in higher education to understand its concepts.

In this structured literature review, specific electronic databases were used to identify the relevant studies: Web of Science, Medline, and ERIC. Medline is a useful database of literature on feedback within medical settings. ERIC is also useful for finding information on social sciences. This is important because feedback in higher education can be studied in the context of non-medical settings, such as educational schools. In addition, the reference lists of key articles and books were scan-read. To find the relevant studies in the electronic databases, the following free text terms were searched: feedback, higher education, further education, self-assessment, self-evaluation, emotion, formative assessment, culture, sociocultural, trust, written feedback, portfolio, eportfolio, multi-source, multisource, assessment, peer, patient, evaluating, and evaluation. Boolean terms were used in this search, for example feedback AND higher education, portfolio OR eportfolio AND higher education OR further education, etc.

The keywords were derived from an initial literature review and then refined and added as the researcher progressed in the literature review. In addition, using 'AND' and 'OR' was helpful to retrieve relevant articles. Furthermore, for more feasible search results, keywords such as 'feedback' were searched in the article titles and abstracts as opposed to the body text. This strategy helped by revealing specific, feasible, and relevant studies.

Articles were not excluded by date of publication to ensure landmark studies are included regardless of how old they are and to evaluate how evidence in this area has evolved. Also, non-medical educational studies are included because they may give insight into how others may experience the feedback.

At the outset of this review, learning paradigms through which feedback may be viewed are explained, followed by additional sections that discuss the key themes emerging.

2.2.2 Learning paradigms

There are many learning paradigms, but only the most relevant will be considered here. From reading the educational literature, the researcher found that these are the key paradigms that are considered in the educational literature to help facilitate learning.

In terms of **behaviourism**, learning is viewed as a change in behaviour and a response to stimuli (Gagne, 1983). The stimuli is often regarded as the 'reinforcement'; Skinner (1938) explained 'reinforcement' as a situation where subjects tend to increase or decrease the frequency of their behaviour in the presence of positive or negative external input. Accordingly, positive and negative feedback can be reinforcers which influence students' behaviour. A limitation of this paradigm is that behaviourists believe in an 'observable' change in behaviours as a sign of learning without considering internal processes (i.e. knowledge construction).

In contrast with behaviourism, **cognitivism** views learning as an 'unobservable' internal process where learning occurs through the transmission of information by explanation, remembering, problem solving, etc. (Anderson 1983). Vygotsky (1978) states that learners reach cognitive development that makes them independent in certain areas. To broaden this area of independence, the learner requires appropriate peer or tutor support. This is called the 'zone of proximal development', which is the difference between being isolated and supported by others. Feedback can serve as such support.

In terms of **social learning theory** or **community of practice**, learning can be viewed as a process that occurs when humans participate in social settings. According to Lave and Wenger (1991), practicing in social settings leads to a change in how humans think, act and behave. Such change happens because engaging in social settings challenges humans through the experience of new abilities with which they are not familiar. Such a social situation can create a feedback process as a result of communicating with others in such communities (e.g. small groups). This theory shares the external process of behaviour and the internal process of cognitivism (Curzon and Tummons, 2013).

In terms of **humanism**, Maslow (1954) presented the hierarchy of human needs, starting with basic physiological needs, and ending with self-actualisation needs. The role of feedback here is in the form of progressive support to help learners achieve self-actualisation.

Perspectives on how people learn differ. While there are similarities, for example, between cognitivism and constructivism, some of these paradigms hold opposite perspectives, e.g. behaviourism and cognitivism. Behaviourism focuses on external processes rather than internal

mental processes, which is the focus of cognitivism. Furthermore, it is clear that social learning paradigm is a common feature of behaviourism and cognitivism, due to its belief in human thinking and action in social practice. Finally, the most important difference is the position of humanism, as it views neither internal nor external processes; rather, it considers human needs as a requirement for self-actualisation. Regardless, all key paradigms of learning recognise feedback as important to learner development.

2.2.3 What is good feedback?

The existing literature identifies the following key challenges concerning feedback. Molloy and Boud (2013) state that not all feedback is beneficial. The reasons for this are many as described here. The learner should have an active role in the process, and feedback not only concerns identifying areas for improvement, but also guiding the learner on how to achieve this (Nicol and Macfarlane-Dick, 2006; Hattie and Timperley, 2007; Nicol, 2009; Molloy and Boud, 2013). Nicol and Macfarlane-Dick (2006) assert that part of the feedback process should include supporting the learner to develop self-regulation and self-evaluation skills. As previously explained, cognitivism subscribes to a human ability to process information independently, denoting self-regulation learning, where students are able to process information about their strengths and weakness.

Although feedback is found to be central in the educational process, other studies revealed some shortcomings in the experience of receiving feedback. In Saudi Arabia, Almously et al. (2014) explored medical students' evaluation of the frequency and quality of feedback received in the clinical rotation in clerkship by applying cross-sectional questionnaires. They found that 53.3% of the fifth-year and 66% of the sixth-year students reported that they rarely receive feedback from the clinical staff. In addition, the overall quality of feedback received was reported as "poor" (43.6%), or as "fair" (24.5%) and none of the sample reported it as "excellent". This study gives insight that the feedback experience may have clear deficiency; however, it lacks more qualitative inquiry which could explore students' experience more deeply, including influencing factors. For example, the author attributed the poor feedback to the fact that tutors are not well-oriented in the feedback process, and other potential factors; however, they fail to evidence what these are. Using the qualitative approach and triangulating data with staff perceptions would have advanced more credible results.

Therefore, feedback experience in such place could not be as expected. This demonstrates the need for evaluating current experience of feedback process and further develop it to reach better satisfying

experience. One of the crucial parts of the feedback process that needs consideration is understanding how the feedback is delivered, i.e. mode of feedback.

2.2.4 Modes of feedback

In this section the variety of forms in which feedback can be conveyed are discussed.

Written feedback

Key authors believe that written feedback is necessary for student learning (Carless, 2006; Hattie and Timperley, 2007; Nicol, 2010; Arts et al. 2016). According to Jolly and Boud (2013), written feedback can easily be shared privately (i.e., given to the intended recipient without being shown to others). Additionally, written feedback is helpful when there is no time to comment directly on student performance.

In the **Netherlands** (department of biology), Arts et al. (2016) sought students' perceptions of what is effective written feedback. They developed an open-ended questionnaire by considering the literature on what effective feedback is and found that some students experienced feedback that neglected to explain desired standards and development plans.

In a different setting, Carless (2006) explored student and staff perceptions of written feedback using mixed methods in **China**. The author used questionnaires followed by interviews to further explore the questionnaire responses. The study revealed that feedback was positively perceived by tutors, more so than students, who perceived some shortcomings in the feedback they received, such as insufficient development plans and unspecific feedback. This finding is also supported by other studies (Giles et al. 2014; Sanchez and Dunwoth, 2015; Arts et al. 2016). Accordingly, Carless recommends 'dialogue-feedback' to overcome the written feedback disadvantages, such as different perceptions between tutor and student, so dialogue would offer a negotiation that reduce that differences. Indeed, other literature (Nicol, 2010; Barton et al. 2016) points out that dialogue supports self-regulation and self-evaluation skills by clarifying criteria for students, making them aware of standards in future practice.

In the study by Carless (2006), a reliable questionnaire was used to produce evidence of the benefits of written feedback. Validity is supported by triangulating the questionnaires, using semi-

structured interviews (Creswell, 2014). Moreover, additional interviews were carried out by an assistant who played no role in students' assessment. As such, students may have been more honest in their answers. Although this study (Carless, 2006) is limited to Chinese universities, it nonetheless provides useful insights into how written feedback is perceived by stakeholders.

In addition to previous research, Giles et al. (2014) explored the perceptions of feedback of 362 third-year nursing students in **Australia** through a questionnaire. While most students (80 per cent) perceived written feedback as important, some noted that feedback neglected to inform them on how to improve, confirming the conclusions of previous studies (Carless, 2006; Arts et al. 2016). Furthermore, some students perceived written feedback as unbalanced and highly critical, as noted by Dunworth and Sanchez (2016). When discussing this issue, Maslow's (1954) perspective within a humanist paradigm can be revisited, as unbalanced feedback can serve as a barrier to supporting students' personal development; such as for example, adversely affecting self-efficacy. This study (Giles et al. 2014) was limited to one population (nursing students) and is therefore not applicable to other settings; it also used only questionnaire without triangulation through other methods of data collection, as has been done by Carless (2006). Moreover, no evidence was provided that the questionnaire in this study was validated through pilot testing, or how the items were derived.

Overall, studies across different settings and geographic cultures indicate that at times students find written feedback challenge. It may lack a dialogue that provide opportunities to guide students in how to improve. As can be seen, questionnaires were employed in all the studies; however, data was only triangulated in one (Carless, 2006). In addition, questionnaires were based on sources or evidence in all studies (i.e. previously used and evidenced by other researchers), except in Giles et al. (2014). The position of the author was better situated in Carless (2006) than in Arts et al. (2016), as the authors were participants' tutors in the latter, which may have negatively affected students' honesty. Furthermore, none of these studies explored medical students view. Consequently, all of the discussed points can be considered in future research that may explore medical students' perceptions regarding written feedback.

Face-to-face feedback

Written feedback is not recommended in some situations. For instance, when the feedback concerns a complex issue (Jolly and Boud, 2013) or requires a high cognitive load to process (van Merrienboer and Sweller, 2005). In addition, urgent feedback on performance should not be provided in written form. Moreover, in situations such as simulations, educators may need to deliver feedback

to a group of students. Although written feedback is essential, face-to-face dialogue after receiving written feedback is also effective for clarification, as noted by Nicol (2010).

In a qualitative enquiry, a **Saudi** study by Alfehaid et al. (2018) explored such reasons behind students' preferences. They found that students suggested the feedback to be more interactive as a dialogue. That mode was suggested because students would be more responsive to the staff's comments, so the staff would be listening to the students' justification.

Feedback in small-group learning (e.g. problem-based learning PBL) is one form of face-to-face feedback. Many authors recommend giving feedback in PBL tutorial groups (Azer, 2005; Dornan et al. 2011; Lee et al. 2013; Goh, 2014). Goh (2014) conducted a qualitative study in **Singapore** (undergraduate polytechnic institute) to identify good PBL facilitation skills. PBL sessions were video-recorded for observation and student feedback on effective facilitation skills was obtained. Goh found that good facilitators promote constructive feedback between students in a group and provide feedback that aids reflection. Regarding this issue, social learning theory can be revisited, as it argues that learning is a result of participation in social settings (Lave and Wenger, 1991).

In a different learning level, De Kleijn (2013) explored master students' perceptions of face-to-face feedback in supervision meetings in the **Netherlands**. Using online questionnaires, the author found that most negative perceptions concerned insufficient feedback development (i.e. what to do next), insufficient self-regulation support and unbalanced feedback (highly critical and focuses on weaknesses). As noted earlier, Giles et al. (2014) support these findings. It may be worth exploring whether assessors who are highly critical also provide insufficient development plans; consequently, negatively affecting student confidence and further development.

Feedback in digital settings (ePortfolio assessment)

ePortfolio is a common mode of feedback in higher education. Davis et al. (2001, p.357) defines portfolio assessment as "a collection of papers and other forms of evidence that learning has taken place".

Accordingly, learners can reflect on experience and demonstrate progression toward learning outcomes (Chang et al. 2011). Furthermore, social learning can be promoted when an ePortfolio is integrated with other social networks (e.g. wiki) (Beresfod and Cobham, 2010). It has a function in formative assessment, in that it can support students' learning through dialogue opportunities with tutor (Yang et al. 2016). Formative assessment "is specifically intended to provide feedback on

performance to improve and accelerate learning" (Sadler, 1998, p.77). In addition, self-regulated learning (SRL) can be developed by asking students to reflect using a portfolio, as argued by Lam (2014). Therefore, through self-reflection, the knowledge gap can be identified (Svyantek et al. 2015) by evaluating the experiences that students face, and subsequently creating an action plan to close the gap.

While an ePortfolio has advantageous features, the literature found dissatisfaction among students regarding the ePortfolio. McMullan (2006) conducted a study on pre-registration nursing students' perceptions of a portfolio in higher education in the **UK**, and found that nursing students displayed a lack of critical skills due to insufficient external guidance and support, with the portfolio approach being time-consuming and ineffective for developing their learning. Thus, portfolio assessments are only beneficial if carried out appropriately, revisiting what Molloy and Boud (2013) state that not all feedback practices are beneficial.

Van Schaik et al. (2013) also studied portfolio assessment, in this instance in relation to self-directed learning (SDL). Eight portfolio mentors' perceptions of SDL were examined in a medical school in **California, USA**. The authors interviewed mentors, transcribed recorded interviews and analysed them according to themes. Results showed that the portfolio was perceived as a means for developing self-assessment via reflection on practice and as such, progression can be demonstrated by said reflection.

Van Schaik and colleagues included experienced mentors (one to nine years of experience). The authors also employed a useful method for collecting subjective opinions in detail (semi-structured interviews). However, this study included only mentors; consequently, mentors' perceptions only cannot provide a sufficient interpretation of students' experience. Despite the study's limitations, it nonetheless provides insight into portfolio assessment.

These studies show that the portfolio has advantages for student learning, specifically for SDL; however, not all of these assessments are beneficial for students, due to the potential for inappropriate execution. McMullan (2006) and van Schaik et al. (2013) conducted studies in the same discipline (i.e. health professions) in which they, contrastingly, explored different sources in terms of perceptions (students vs. staff). Staff perceptions were more positive than those of students; here, the latter is potentially more useful, because it can help toward improving students' engagement. It will be worth exploring the reasons for the disparity in perceptions between staff and students.

Feedback in simulation

Formative assessment can also take the form of debriefing in simulation (Rudolph et al. 2008). Lederman (1992) defined debriefing as "a process in which people who have had an experience are led through a purposive discussion of that experience" (p.146). Thus, debriefing acts by facilitating reflection, which leads to identifying the gaps in the learner's performance during simulation (Fanning and Gaba, 2007). This reflection is a key step in experiential learning (Rudolph et al. 2008), because the learning cycle starts with a concrete experience, which the learner should reflect on. The conclusions from this reflection are tested by the learner during a new experience (Kolb, 1984).

Furthermore, simulation offers learners the opportunity to practise self-assessment. In the **USA**, Macdonald et al. (2003) examined medical students' self-assessment of technical skills via simulation, with 21 second- and third-year students. By correlating students' self-assessment with trainer data, they found that through the practice and repetition of procedural skills, students can develop skills for self-assessment.

While Macdonald et al. (2003) examined technical skills only; Arora et al. (2011) examined 25 **UK**-based surgeons' self-assessment on technical and non-technical skills (e.g., communication) via simulation (laparoscopic cholecystectomy (LC)). The authors employed a correlation method for expert faculties' assessment and found a strong correlation with the expert regarding technical skills, but not for non-technical skills; accordingly, external feedback is central in non-technical skills.

This study (Arora et al. 2011) used validated instruments to assess surgeons' performance, i.e. Objective Structured Assessment of Technical Skills (OSATS) and the Non-Technical Skills for Surgeons scale (NOTSS). Additionally, in the same study, two experts assessed each surgeon, thereby evaluating inter-rater reliability. Following analysis, a good inter-rater reliability between the two assessors was found. However, this study was limited to only one environment (laparoscopic cholecystectomy (LC)). Furthermore, NOTSS requires training to be used (Yule et al. 2009, cited in Arora et al. 2011), and not all surgeons were trained to do so in this study. This may have given rise to low correlation between the experts' assessment and the surgeons' self-assessment. Although this study has limitations, it nonetheless provides insight on self-assessment in simulation.

The studies reviewed above have employed triangulation by comparing student assessment with that of a trainer or expert. However, the result reliability was supported by Arora et al. (2011) more than Macdonald et al. (2003) because the former sought two experts' assessment rather than only one. Additionally, it is clear that self-assessment worked well for technical skills in different environments (Macdonald et al. 2003; Arora et al. 2011), but not for non-technical skills (Arora et al., 2011). It will be worth exploring why self-assessment does not work well in the development of non-technical skills.

In addition to self-assessment, external feedback in simulation is important. Kruglikova et al. (2010) examined the effect of external feedback from expert supervisors on inexperienced simulation trainees including 22 trainees in Denmark. They adopted a randomised controlled trial for endoscopy simulation, and trainees were divided into two groups; one received external feedback and the second was independent without receiving external feedback (controlled). They found that the first group performed better than the second. This result revisits Vygotsky's (1978) theory regarding the zone of proximal development, which can be achieved only through external support. Finally, all of the discussed feedback modes may arise from a variety of sources, which the next section discusses in detail.

2.2.5 Sources of feedback

In addition to tutor feedback, other sources can be considered useful for feedback, i.e. self, peer, patient, and multi-source feedback (MSF).

Self-assessment

Self-assessment skill is an important issue for adult students in terms of supporting self-regulation, as noted by key authors (Nicol and Macfarlane-Dick, 2006; Boud et al. 2013; 2015). Despite its importance, research reveals that learners are often inaccurate in their self-assessment (Mowl and Pain, 1995; Taras, 2003; Violato and Lockyer, 2006; Hanan et al. 2012), concluding that external feedback is critical for learners.

The literature examines self-assessment ability. In **Saudi Arabia**, Hanan et al. (2012) explored medical students' experience of self-assessment using semi-structured interviews as a qualitative method, found that students had poor self-assessment skills and required support through tutor feedback, an outcome attributed to the effects of culture. Culture can be related to the ideas, customs and social behaviour of a particular people or society. In this study, the geographic culture of these students is to seek tutor feedback rather than self-assessment (see the section on culture effects, page 34).

This study used a qualitative approach, which is an appropriate because experience is subjective and can be explored through in-depth discussions (Cohen et al. 2011). However, this study only included male and clinical-year students; in addition, no sample selection criteria were provided

or explained, and whether participants have previous experience in self-assessment is not clarified. Furthermore, it only employed semi-structured interviews.

In a different setting and using a different method, Violato and Lockyer (2006) examined the self-assessment ability of 308 physicians in **Canada**. They used only questionnaires, asking physicians to self-assess and also to assess peers. By correlating students' self-assessment with peer assessment, the authors revealed that physicians were not good self-assessors, and required external objective feedback. In this study, the authors did not explain participants' experience of self-assessment, which may be a reason for their weak ability to self-assess.

To solve the self-assessment problem, Boud et al. (2013; 2015) conducted a study at an **Australian** university concerning students' voluntary self-assessment over a period of three years (Bachelor of Business) and five years (Bachelor of Design). They concluded that by receiving tutor feedback on self-assessment over time, students became aware of errors in their self-evaluation, as was also found by Taras (2003). This indicates that Vygotsky's impression of learning can again be reviewed here, as external support had an effect on the proximal cognitive development of students, compared to isolated learning. A limitation of this study is that authors focused on one tutor assessment only as a correlation for self-assessment accuracy; some believe depending on only one tutor rather than several to be unreliable (Ward et al. 2002).

The study by Boud et al. (2013; 2015) has an advantage over that of Violato and Lockyer (2006) and Hanan et al. (2012) in terms of assessing participants' long-term experience with self-assessment. This link (self-assessment experience and its accuracy) can be further researched by exploring students at different levels and in different countries that may have different learning culture.

While the discussed studies aimed to examine self-assessment accuracy, Eva and Regehr (2005) reviewed literature and appraised the concept of self-assessment itself. They argue that the value of self-assessment is deemed to be in doubt, partly due to the methodology used in self-assessment literature. They add that the challenge concerns more than methodological issues, and that this approach "[fails] to effectively conceptualize the nature of self-assessment in the daily practice of [the] health care professional" (p.46).

In accordance with metacognitive theory (i.e. thinking and awareness about one's own cognitive process), Eva and Regehr argue that, rather than be concerned about the accuracy of self-assessment, it is more important to consider the accuracy of the factors that can affect metacognition. In other words, self-assessment about performance is made through, certain cues and factors (e.g.

time and effort employed by students in their learning). People with a high self-confidence in performance may encounter barriers when attempting to gauge their performance accurately. Therefore, Eva and Regehr argue that, rather than evaluating self-assessment accuracy, it is more important to consider the accuracy of these proxy factors utilised in self-assessment, by seeking out external feedback.

All of the empirical studies reviewed in this paper, examined self-assessment accuracy itself, rather than the cues students use in their self-assessment, indicating that there maybe a missed opportunity to develop research in exploring these cues and how they affect the accuracy of the self-assessment itself.

Peer assessment

Peer assessment provides feedback of the learner's strengths and areas for improvement from the peer's perspective. Simpson and Clifton (2016) examined master's degree students' perceptions of peer assessment in **Australia** and found that students perceived it as a useful strategy for both the recipient and provider. Specifically, other empirical studies have revealed that peer assessment can promote self-reflection and regulation skills through engagement in criteria based assessment i.e. employing appropriate standards when assessing performances (Bloxham and West, 2004; Carnell, 2016; Gikandi and Morrow, 2016; Ion et al. 2016).

In the **UK**, Bloxham and West (2004) examined how peer assessment affected the perception and performance of 43 undergraduate students in sociology. By adopting a mixed-methods approach (quantitative and qualitative), they found that self-regulation skills were developed by peer assessment.

In a different setting, Gikandi and Marrow (2016) explored peer feedback effectiveness in online courses of teacher education (postgraduate diploma) in **New Zealand**. Compared to previous studies, they employed only qualitative case studies; however, these case studies also confirm that peer assessment contributes to the development of self-regulation skills.

In addition to these studies, Ion et al. (2016) included 160 undergraduate students of social education to analyse what type of feedback peers provided, and to explore students' perception of peer feedback in **Spain**. This study found that students often provide feedback related to the task (feedback levels shown in Appendix 2) and that this feedback is perceived to inform the development of self-regulation skills.

This indicates that students from a range of levels (undergraduate and postgraduate) and using various modes (face-to-face and online) agree about developing self-regulation skills by practicing peer assessment. These studies explored similar questions; however, only Ion et al. (2016) addressed the type of feedback peers usually provide.

Although the research evidence indicates that peer assessment usually leads to positive learner development, in a study conducted in **Spain**, all participants were found to have over-scored their peers, particularly those with whom they had strong friendships, despite using a rubric (which decreases bias by guiding the assessor in assessment) (Panadero, 2013).

Regarding **Saudi Arabia**, the study by Alfehaid et al. (2018) found that most students appreciate their colleagues' feedback, and some of them might consult their peers before they consult the faculty staff. However, they found that some medical students although number were small (n=4) and pharmacy students "were more conservative in receiving feedback from other students, as the educational environment makes the students more competitive" (p. 192). This merits further research in a PBL setting since a PBL tutorial involves a small interactive learning group; this environment would create more cooperative and less competitive interaction (Ertmer and Glazewski, 2006).

Such issues related to peer assessment can be overcome through feedback from instructors on peer assessment to inform peer assessor's objectivity in assessment (Carnell, 2016). In the UK, Carnell (2016) explored the advantages and disadvantages of peer assessment using a qualitative, one-focus group of six students. This study found tutor feedback on peer assessment improved its accuracy.

Finally, peer assessment can be considered beneficial for self-regulation skills through criteria based assessment, but without external assessment from a tutor on peer assessment may lead to an unreliable assessment. As revealed by literature, peer assessment could be influenced by the friendship as found by Panadero (2013) or by the competitive environment such as in the study by Alfehaid et al. (2018). These potential factors may be worth exploring.

Feedback from patients

Wykurz and Kelly (2002) conducted a literature review and concluded that patients can be a source of teaching patient communication skills. Additionally, on the basis of a randomised controlled trial in **Taiwan,** Lin et al. (2013) state that patient feedback produces improvement in communication

skills reported by students. Therefore, the patient plays a valued role in contributing to both teaching and assessment.

Not all of the research on this topic supports the benefits of patient feedback. Reinders et al. (2010) conducted one randomised controlled trial in a medical centre in the **Netherlands** to assess trainees' consultation skills. Both groups attended a communication skills training programme, but one group received additional training through patient feedback. However, patient feedback did not improve the consultation skills. This Dutch study had a different result to the Taiwanese study by Lin and colleagues. One possible reason for this is the effect of culture on patient feedback practice, which deserves further research.

In addition to the discussed studies, Boiko et al. (2015) explored **UK**-based primary care staff perceptions regarding the effectiveness of patient surveys. Using a qualitative focus group, they found that staff explored areas for development in consultation skills through patient feedback. However, staff complained that only a small number of patients respond to surveys, which negatively affects the viability of relying on patient feedback to identify areas for development. This finding is confirmed by another study regarding various settings, i.e. Dine et al. (2014), who assessed the feasibility and validity of patient perspectives on intern communication skills and professionalism. They found that a significant number of patient ratings must be obtained for each intern to support reliability, and that patient evaluations did not correlate with supervisors' assessments. That happened because patients may focus on different aspects of an encounter with the intern than clinicians.

In conclusion, in order for patient feedback to be of value, a certain number of observations need to be obtained; this can be a challenging task in practice. This applies to peer feedback, too, in post graduate setting.

Multi-source feedback (MSF)

MSF is "a means of assessment based on collated questionnaires from a range of co-workers and may also include patient feedback" (Davies and Archer, 2005, p.77). Research has shown that MSF is a valid and reliable method for assessing the needs and performance gap (Davies and Archer, 2005; Davies et al. 2008; Al Ansari et al. 2015; Ladyshewsky and Taplin, 2015). The approach is valid because it assesses many important practices (Davies and Archer, 2005), for example, communication skills. Additionally, it is reliable because it offers multiple assessors instead of a singular perspective. Moreover, MSF can inform the accuracy of self-assessment; and inform the learner whether they

maybe underestimating or overestimating their own performance (Davies and Archer, 2005; Taylor, 2014).

MSF can be applied and implemented in different contexts, including medical education (Davies et al. 2008), business education (Ladyshewsky and Taplin, 2015), and nursing education (Asmara, 2015).

Davies et al. (2008) assessed MSF validity, reliability and feasibility with first year histopathology students in the **UK**. In this study, students were assessed by objective structured practical examination (OSPE). Corresponding MSF to the OPSE performance was used to assess the validity of MSF. This study revealed that MSF in a speciality-specific context is valid (due to high correlation), reliable (eight assessors) and feasible, as the response rate was high. The authors conclude that the validity of MSF instrument is important to consider, and that using a blueprint is helpful for this specific target. This study employs an appropriate design (i.e., correlation to an objective source of assessment), but is limited to one speciality in one geographical culture. Nonetheless, it provides insight into how to evaluate the validity of an MSF instrument.

The aim was the same as that of Davies and colleagues, but within a different geographic culture, Al Ansari et al. (2015) included all students in the intern clerkship year (21 interns) in **Bahrain**. They reveal MSF to be a valid, reliable and feasible assessment. Although the study was limited to only 21 interns, it nonetheless provides insight into utilising MSF within PhD researcher culture (in the Middle East).

While both studies (Davies et al. 2008; Al Ansari et al. 2015) assessed MSF validity, Davies and colleagues assessed speciality specific skills, rather than generic skills, whereas Al Ansari and colleagues assessed the latter. Thus, assessing speciality specific skills in the Middle East might worth exploring. Al Ansari and colleagues state that there has never been a study of MSF in Middle Eastern culture. This is important, as there are factors that can affect the feedback process such as culture. The next section discusses this in detail.

2.2.6 Factors affecting feedback

In this section, the researcher will consider key factors affecting feedback. The literature review revealed three key themes: emotion, trust and culture (Boud and Molloy, 2013a). All of these

factors are recipient-centred perspectives. Within the feedback literature, this marks a significant change where feedback research historically focused on educators.

Emotions

Emotion as a factor affecting feedback is an important issue in higher education. According to Shields (2015), being confident and feeling capable of achieving success is a critical emotion that students aim to feel, and feedback can have negative effect on this. This may cause students to subsequently withdraw from the learning process (Carless, 2006; Sargeant et al. 2008, 2011; Dowden et al. 2013). Therefore, emotional reaction to feedback is an important educational issue that should not be ignored (Carless, 2006; Varlander, 2008).

According to Sargeant et al. (2008), certain strategies can be used to improve a student's emotional reaction to feedback. Firstly, feedback should be about the task, rather than focus on personal issues. Secondly, students should be given feedback that explains how to improve and be provided with an opportunity to reflect on the feedback they have received.

Shields (2015) explored first-year students' emotions regarding feedback received on first assignments in the **UK**. Shields found that feedback had a significant impact on the recipient's emotions. Students who received negative feedback in their first year exhibited damaged self-esteem, and for this reason, the author recommends that in the first year, opportunities for feedback should be through formative assessment. This relates to Maslow's theory of humanism, as it views learners as humans who need support to achieve a high level of self-esteem (Maslow, 1954). Negative feedback can be considered a barrier to this end; thus, rather than providing highly unbalanced critiques, students should be assessed gradually and in a balanced manner. Furthermore, the behaviourist paradigm can be reviewed here, too, as "reinforcement" can lead to an increase or decrease in the frequency of behaviour (Skinner, 1938). Thus, negative feedback can lead to negative reinforcement by having students decrease their learning as a result of experiencing negative emotions and having their confidence damaged.

In Shields' study, the methodology (an interpretive approach) is appropriate to the aims of the research. The credibility of the study is good, as the author returned the transcript (after the interviews) to participants to check their accuracy (Creswell, 2014). However, Shield did not discuss in detail how to overcome emotional reactions.

Trust

The term “trust” here is defined as how students trust the ability of an assessor to provide effective feedback, not the trustworthiness or reliability of a specific type of assessment (Carless, 2009). A good relationship between a student and staff members has a positive effect on learning and assessment (Crossman, 2007; Lee and Schallert, 2008). Also, a good relationship can have a potential influence on the feedback provided by peers. In that point, Chou et al. (2013) examined the effect of the long-term relationship between students in a small group on the process of feedback on communication skills. By using a mixed-methods approach, they found that peers who had a long-term relationship tended to give more specific feedback about communication skills.

The credibility of feedback can be viewed differently according to different professional cultures. Watling et al. (2013) conducted an exploratory study in a **Canadian** university using mixed methods, with the aim of exploring how different professional cultures (music, teacher training and medicine) deal with feedback. The theoretical framework underpinning Watling et al. (2013)’s study is constructivism. In order to gather insights into participants’ experience of feedback, the researchers asked open-ended questions, and the data was analysed by transcribing the recorded interviews. Thematic coding was then applied.

Watling and colleagues found that all cultures perceived “credibility” and “constructiveness” are critical in terms of feedback’s impact. Each culture had a distinct definition for credibility. Medical students perceived the supervisor’s clinical skills as important for feedback credibility. Teacher trainers believed in the importance of the supervisor’s experience, while music students preferred a supervisor with instructional skills. Thus, credibility is important and has an impact on the feedback received.

Furthermore, trust can be influenced by the interpersonal skills of tutors. A Saudi study by Alfehaid et al. (2018) confirmed that interpersonal relations with faculty staff influenced how much students valued of the feedback received. The feedback received a tutor they knew well would be better valued and more honest, as some students believed; however, others did not value that since it was influenced by 'courtesy' as would happen with a person known well.

Culture

Culture has an impact on the conception and processes of feedback (Evans and Waring, 2011). As noted earlier, culture can be related to the ideas, customs, and social behaviour of a particular

people or society. It can be tied to geography (Middle East vs. Western) or profession (physicians vs. teachers), among others. As previously discussed, different professional cultures have been shown to have different perceptions regarding the credibility of feedback (Watling et al., 2013).

Al Wassia et al. (2015) explored the cultural challenges for implementing formative assessment in **Saudi Arabia** on undergraduate fourth- and fifth-year clinical students. The authors used a mixed-methods approach, whereby they first conducted a qualitative focus group discussion, then analysed the data according to themes. Second, they created questionnaires based on these themes to further explore these themes. They found that the emphasis of this specific student culture was on grades. Concerns about summative assessment often focus on achieving the highest possible grade. In addition, students feared engaging in dialogue with faculty members due to the hierarchy factor, and the barriers caused by this hierarchy. The students who participated were mostly high achievers, whereas there should have been a balance between excellent, very good, and fair students within this study. The study also only included fourth- and fifth-year clinical students. Furthermore, it is not based in a PBL setting. While this study has limitations, it nonetheless is one of the few studies to provides an understanding of the cultural effects on the feedback process in the PhD research setting in Saudi Arabia.

Regarding the summative assessment, the context of assessment is considered a culture, too, and it has influence on the students' receptivity to such feedback (Harrison et al., 2013). Harrison et al. (2013) explored how students engage with feedback in a summative assessment context and to what extent learning characteristics, such as motivation, influence students' engagement with the feedback. Also, they explored how students' performance in objective structured clinical examination (OSCE) influenced that engagement, too. By applying a quantitative approach, including 132 third-year medical students in a PBL setting in the **UK** (Keele University), they found that students who reported (via questionnaire) a high value for feedback (i.e. they believed that feedback is very important) had a high rate of visits to the received web-based feedback. Furthermore, the students who reported "extrinsic motivation" made minimal feedback visits. Regarding the influence of OSCE performance, the students who had 'just' passed it made minimal feedback visits too.

This study (Harrison et al., 2013) confirms that feedback in a summative assessment context is not always engaged with by students, and that merits further concern by policy-makers. Although this study gives important insights into different student responses towards summative feedback, it is limited to one context and one setting (third-year medical students at Keele Medical School). In addition, the quantitative approach does not insight into why such a numeric result exists (e.g. minimal feedback visit by low-performing students in OSCE).

In a subsequent study, Harrison et al. (2014) explored the reasons why medical students did not use the feedback effectively in the summative assessment context in a PBL setting in the **UK** (Keele University). They conducted 17 interviews with students who had recently received web-based feedback in that context after processing the OSCE exam. They found that the fear of failure that the summative context could lead to, created an emotional reaction, negatively influencing students' use of feedback. It was believed by students that the summative stage is an end point, and the target was to pass that stage instead of being a stepping stone for future work. They found, too, that the sense of competition among peers that was created by the summative context inhibited peers' discussion of the received feedback. Another issue they found was how students' formative experience influenced their expectations of their achievement. Since they were at the top of the class prior to medical school, they faced a difficulty to continue in that manner, so they just aimed to pass even though this meant having the minimum required grade. According to the authors (Harrison et al., 2014), this was caused by the summative assessment culture. Thus, culture, as an assessment context, could have influence on the feedback process.

Although OSCE is a summative assessment that is processed in most undergraduate medical programmes (Harrison et al., 2014) another cultural consideration, which is the geographical culture, could further influence the summative assessment effect on feedback receptiveness. In addition, this study was limited to one assessment culture (i.e. summative), and that limitation required further investigation to explore the influence of different assessment cultures on the feedback process.

Harrison et al. (2016) explored which factors influenced students' receptiveness of feedback in different assessment cultures, both traditional summative assessment and programmatic assessment (based on multi-low-stake assessments involving narrative feedback, i.e. formative). This study was conducted in a wider setting compared to the previously reviewed study (Harrison et al., 2014) involving three different countries **(USA, UK, and Netherlands)** that use the PBL curriculum, and applying six focus groups. The authors found that promoting students' agency (i.e. giving a student the chance to demonstrate their attainment of new knowledge by their choice) had a positive role in student receptiveness to the feedback. Furthermore, a relevant assessment to future need was found to act as a positive factor that enhanced feedback receptiveness. Other findings included absence of grading and presence of scaffolding, which promoted students receptiveness to the feedback too. Absence of grading meant that students had a better focus on the feedback as a more formative measure of their performance.

Although this study did not compare the two different assessment cultures, it gives important potential factors influencing the feedback process. Also, triangulation through investigating the views of different stakeholders (e.g. tutors) would provide further validated themes.

Later on, Harrison et al. (2017) explored such personal beliefs that may influence the redesign of the summative assessment culture in order to promote feedback process. A mix of stakeholders (medical students, clinical teachers, and senior faculty members) from Keele University in the **UK** were interviewed individually after they had been asked to suggest radical solutions to improve the feedback experience. Since the participants had only experienced summative assessment, that prior experience played a great role and offered a challenge to accept changes in and reconceptualise the summative assessment culture:

> "We have shown that a variety of stakeholders hold common assumptions about the primacy of summative assessment. A lack of prior experience of alternative assessment cultures hinders the conceptualisation of radical change. In order to successfully implement a change in assessment culture, firmly-held intuitive beliefs about summative assessment will need to be challenged as a first step" (Harrison et al. 2017, p.13)

In conclusion, Watling et al. (2013), Al Wassia et al. (2015) and Harrison et al. (2013, 2014, 2016, and 2017) used different methodologies but had a similar fucus: the effect of culture on the feedback process. While these studies were conducted in different settings and cultures, all support the notion that culture (professional, geographical, or educational, i.e. assessment) has a clear impact on the feedback process. Al-Wassia et al. (2015) and Harrison et al. (2014; 2016) similarly targeted the effect of assessment context (either summative or formative); however, Al-Wassia et al. (2015) emphasised the geographical cultural challenges side, while Harrison et al. (2014; 2016) emphasised the effect of the assessment culture itself. Interestingly, they found that students' emphasis on grades had a negative influence on the feedback perceptiveness although they (i.e. the studies) were based in different geographical cultures.

Although all these studies targeted students, who are central to the educational process, some of them successfully triangulated data collection through involving different stakeholders who share similar experience with students (Watling et al., 2013; Alwassia et al., 2015; Harrison et al., 2017). This strategy is effective in attaining more credible findings (Cohen et al., 2011).

The study by Al Wassia et al. (2015) was the only one based on Middle Eastern culture. By considering this point and other limitations in the work of Al Wassia et al. (2015), future research in

the Middle East can support bridging the gap pertaining to insufficient research about the effect of culture in this area (Al Wassia et al., 2015).

Future research will have an important impact on the educational process. Watling (2014) argues that the learning culture and individual learners should be considered in good feedback implementation: “We propose instead a model for understanding feedback that considers both the individual learner and the learning culture as essential and inseparable elements of the process” (Watling, 2014, p. 127). Also, Harrison et al. (2017) revealed that implementing formative assessment culture and feedback could be challenged by the stakeholders themselves. Thus, understanding the culture, where feedback is to be implemented, is important for successful curriculum change, and this supports what Jippes et al. (2015) concluded, as explained in the introduction chapter.

2.2.7 Conclusion

In conclusion, though much is known about good practice for implementing feedback in higher education, as highlighted in earlier sections, many areas require further research, e.g. the influence of culture on feedback process. In this literature review, 11 key issues were explored in different cultures. While these studies raised interesting points, they were mostly based in the UK, Australia, the USA, and other geographies (western cultures). Very little evidence exists of studies in this area being conducted in the Middle East, more specifically, in Saudi Arabia. For this reason, exploring key issues, for example, the effect of culture on dialogic feedback, in local context will contribute to this field. Therefore, future research should consider whether culture affects learning, the learner–tutor relationship, and the feedback process in Saudi Arabia, specifically the PBL context.

2.3 Literature Review Part 2: The Educational Theory and Development of PBL.

2.3.1 Introduction

Before discussing the relevant literature of feedback in PBL in Part 3, firstly it is important to understand PBL. Davis and Harden (1999, p. 130) define PBL as:

> *"a continuum of approaches rather than one immutable process. It is a teaching method that can be included in the teacher's tool-kit along with other teaching methods rather than used as the sole educational strategy. PBL reverses the traditional approach to teaching and learning. It starts with individual examples or problem scenarios which stimulate student learning. In so doing, students arrive at general principles and concepts which they then generalize to other situations".*

According to Boud and Feletti (1997), PBL is defined as:

> *"an approach to structuring the curriculum which involve confronting students with problems from practice which provide a stimulus for learning" (p. 15).*

Albanese and Mitchell (1993) defined PBL as:

> *"at its most fundamental level is an instructional method characterised by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences" (p.53).*

Barrows' (1985, p. 15) definition of PBL is:

> *"The basic outline of the PBL process is: encountering the problem first, problem solving with clinical skills and identifying learning needs in an interactive process, self-study, applying newly gained knowledge to the problem, and summarising what has been learned".*

Although these definitions explain PBL slightly differently, they all indicate that PBL is a student-centred curriculum using a real 'problem' to facilitate learning. One of the clear differences between PBL and traditional education is that students in the former system learn the principles first and then apply it to a clinical context, while in PBL this is reversed (Davis and Harden, 1999; Savery, 2006). Therefore, in PBL, students face real and relevant problems that they may face in future professional life and this has many advantages:

> *"…it contributes to the students' motivation; it encourages active intellectual processes at the higher cognitive levels; it probably enhances the retention and transfer of information; it can be modified to meet individual student*

needs; and it encourages curiosity and systematic thinking." (Neufeld and Barrows, 1974, p. 1042).

Therefore, PBL can be considered a feature of curriculum rather than a simple educational strategy. Such curricula mainly takes a student-centred approach and can be applied in different disciplines and lifelong professional learning (Boud and Feletti, 1997). PBL was first developed in the mid-1960s at McMaster University in Canada by Howard Barrows (Neufeld and Barrows, 1974; Barrows and Tamblyn, 1980). Since then, many schools in the world have adopted this approach. Indeed, some are "misusing and misapplying" this approach (Davis and Harden, 1999). Thus, understanding the actual PBL approach can help in evaluating other applications of PBL.

2.3.2 Why PBL?

Neufeld and Barrows (1974) mentioned that one of the critical features of the PBL approach is that clinical science is interwoven with basic science instead of being separate, as is the case in traditional education. An earlier study undertaken by Barrows and Mitchell (1975) sought students' and tutors' perspectives on the PBL approach in an undergraduate neuroscience course at McMaster University. By interviewing tutors and students, they found that this approach produced positive educational outcomes. Students expressed that PBL developed their skills in problem-solving and "they felt that the problem-solving method ensured that they tied basic science to clinically relevant material" (p. 227).

Also, PBL includes a feature that students are required to be self-regulated learners (SRLs) (Puntambekar, 2015). The self-regulated learning (SRL) process emphasises 'how students select, organise, or create advantageous learning environments for themselves and (b) [on] how they plan and control the form and amount of their own instruction' (Zimmerman, 1990, p. 13). Therefore, students independently plan and work to achieve the academic performance required.

Self-directed learning (SDL) is a related term used occasionally with 'self-regulated learning' in medical education literature (Gandomkar and Sandars, 2018). Self-directed learners share the independent learning feature with self-regulated learners; however, they have an additional feature in that the task at the beginning of the learning process is self-identified. In other words, self-directed learners are self-regulated learners, but the reverse is not true:

"Clearly, both SDL and SRL carry an element of student control. However, the degree of control the learner has, specifically at the beginning of the learning

process when the learning task is defined, differs in SDL and SRL. In SDL, learning task is always defined by the learner. A self-directed learner should be able to define what needs to be learned … In SRL, the learning task can be generated by the teacher" (Loyens et al. 2008, p. 418).

Meta-analytical research has found that PBL graduate students demonstrate better clinical reasoning skills compared to traditional graduates, but they have the same level of knowledge (Albanese and Mitchel, 1993; Vernon and Blake, 1993). In terms of self-directed learning, Schmidt et al. (2006) aimed to explore the long-term effect of the PBL approach on graduate students compared to that of conventional education. By using questionnaires, they found that PBL students are more self-directed learners and better at solving problems than students who learned using the traditional method. Although Schmidt et al. (2006) found that conventional students had better medical knowledge than those who studied according to PBL, they support the abovementioned meta-analytical research in that PBL students have better learning skills (Albanese and Mitchel, 1993; Vernon and Blake, 1993).

Barrows (2000), a pioneer in PBL, explained the PBL tutorial process. It involves, in summary, starting the first session by assigning different roles for the students in the small group (e.g. chairman, case reader, etc.). The students then read the problem and identify any unclear terms. The reading stage acts as a stimulus for prior knowledge activation. In order to solve the problem, a hypothesis is generated using a brainstorming technique. This leads to a determination of the learning needs (i.e. learning outcomes) that will be developed during self-study after the first session ends. In the second session, the self-study is completed and followed by time for a constructive discussion supported by a facilitator. In Barrows' process, the students are not aware of the learning needs at first. However, some institutions give the students the learning objectives before they start.

Davis and Harden (1999) explained that the detailed PBL tutorial process may differ among institutions; however, they should all focus on the core principles of the PBL approach (i.e. that it is student-centred) and generating rules and principles from problem-solving as a first step. Although some medical schools may adopt PBL approach, they may be different in how they implement the process, for example, Harvard University and Maastricht University (Davis and Harden, 1999). Some institutions may adopt a purely PBL approach, while others may choose to blend PBL with other approaches, such as lectures. Others may still use the traditional lecture based method of education which is not PBL but relies on more didactic approaches. Not all universities in the Gulf countries use the PBL approach (Hamdy et al., 2010).

Therefore, one of the aims of this Ph.D. research is to explore different PBL curricula in the chosen setting (Saudi Arabia) and to identify any similarities and differences between them regarding

the facilitation skills, especially focussing on feedback skills. A further aim is to explore if there is an effect of these similarities and differences of facilitation skills on the feedback process. This is important because poor facilitation of the PBL tutorials may lead to unintended negative outcomes (i.e. a lack of self-directed learning and good reasoning skills, etc.). In this situation (i.e. inappropriate implementation of the PBL approach), the traditional strategy of education might be better if it is correctly implemented (Edmunds and Brown, 2010). Savery (2006) explained that some institutions may fail to achieve the PBL curricular outcomes despite calling their approach 'PBL'. According to Boud and Feletti (1997), failing to achieve PBL's intended outcomes may be due to the institution's weaknesses or assessment methods which do not lead to the learning outcomes. Therefore, this Ph.D. research aims to explore this critical issue of the feedback process in PBL to enable improvement in medical education in Saudi Arabia. The next section briefly discusses the learning paradigms that underpin PBL.

2.3.3 Learning paradigms

Dennick and Spencer (2011) pointed out that small group learning is based on cognitivism, experiential learning, and adult learning. Although these paradigms were not part of the literature review in part 1, it is important to understand the theoretical basis of the PBL approach.

In term of cognitivism, Vygotsky (1978) viewed support from others (e.g. by peers or tutors) as essential to reach into the zone of proximal development, which is defined as the difference between a student's cognitive ability in an isolated situation and in a state of being supported by others. PBL is an application of this paradigm because students 'cooperatively' work to solve a problem and are also supported by their tutor.

'Experiential learning' views learning as a result of reflection on the experience. Kolb (1984) explained that reflection on experience leads to considering an action plan which can be tested in a new experience and then reflected upon. This renders the learning a continuous cycle. PBL is a suitable setting for this reflection. The reflection might be on one's own experience or on others' thoughts and interventions.

The adult learning paradigm focuses on a learner's nature as an adult. Knowles (1990) differentiated between younger (pedagogy) and adult (andragogy) learners. Adult learners are more independent than young learners. Adults bring their rich life experiences to the learning process and are self-motivated. Young people have more limited life experience and are dependent on teachers

as sources of information and motivation. PBL is a strategy which is used by adult students with rich life experiences and who allow those experiences to be activated.

Therefore, these perspectives are in contradiction. Vygotsky and Kolb focus on cognitive development; however, the former views the social setting as a key factor while the latter views experience as the key factor. Knowles did not believe what the others perceived; rather, he focused on the psychological nature of the learners. Although these perspectives differ, all of them consider PBL as an effective approach to learning. To implement PBL (well), one of the important stakeholders who should be developed is the tutor (facilitator).

2.4 Literature Review Part 3: Scoping review

2.4.1 Introduction

The literature review of feedback in higher education (Part 1 of the literature review) informed this scoping review.

The literature review in the Part 1 led to 11 different themes which discuss feedback from different points of view. These include the following:

1. Feedback can be provided in different modes:
    - Traditional written form.
    - Direct (face to face).
    - Digital (e-portfolio).
    - Simulation.
2. The literature discusses different sources of feedback. In addition to tutor feedback, feedback can arise as a result of:
    - Self-assessment.
    - Peer assessment.
    - Patient assessment.
    - Multiple sources.
3. There are important factors which may affect the feedback process, such as:
    - The emotional reaction of the recipient of the feedback.
    - The trust between the assessor and the assessed.

- The geographical or professional culture that contextualises the feedback process. Here, as informed by Oxford dictionary, culture includes the ideas, customs, and social behaviour of a particular people or society. And is not limited to geographical (Middle East vs. western) or professional (physicians vs. teachers) differences for example.

Very little evidence exists of studies in the area of feedback within problem-based learning (PBL) approach in medical education, especially in the Middle East and, specifically in Saudi Arabia. Because 'culture' is a potential factor which can affect the feedback process, it is important to both explore its effect on and challenges to feedback in the PBL approach. Furthermore, the southern theory advocate generating knowledge based on a local cultural context instead of the dominance of western literature. Therefore, this Ph.D. research will focus on feedback in the PBL approach in Saudi Arabia.

To review the literature on the feedback process in PBL, a scoping review is adopted herein which aims to map the literature in a broad context to find knowledge gaps, instead of focusing on a specific research question in the case of a systematic review (Levac et al., 2010). In addition, it does not aim to assess the literature's quality as the main purpose is to find knowledge gaps (Arksey and O'Malley, 2005). Arksey and O'Malley's (2005) framework for a scoping review has been used as a guide for this review:

"Stage 1: identifying the research question

Stage 2: identifying relevant studies

Stage 3: study selection

Stage 4: charting the data

Stage 5: collating, summarizing and reporting the results" (p. 22).

2.4.2 Research question

As noted above, there is a lack of research on the feedback process in PBL. Thus, this study aims to explore this area of research. The research question is 'What is known about feedback process in PBL?' The researcher aimed to set a broad question because that is important for discovering the breadth of literature available (Levac et al., 2010).

2.4.3 Relevant studies

In the structured (first) literature review on feedback in higher education, specific electronic databases were used to identify the relevant studies: Web of Science, Medline, and ERIC.

In this stage of the scoping review, the key journals: Medical Education and Medical Teacher were searched as additional sources because the researcher through hand searching found these journals frequently publish on feedback. Moreover, the reference lists of key articles were read. Initially, the relevant keywords used in the search process were: feedback, problem based learning, problem-based learning and PBL. Then when the researcher was reading the articles with these keywords, he further added other key words including: formative assessment, peer, peer feedback, peer assessment, small group, small groups, and culture. This process is further presented in Table 2.1.

Table 2.1 the process of keywords selection

Initial step	Further step
feedback, problem based learning, problem-based learning and PBL	formative assessment, peer, peer feedback, peer assessment, small group, small groups, and culture

As the researcher did in the first structured literature review, again in this scoping review, 'AND' and 'OR' were used in Boolean terms, for example, feedback AND small groups OR problem-based learning OR PBL. The terms 'feedback' and/or 'problem based learning' were searched again in the studies' titles and abstract as opposed to the body text. This strategy helped by revealing specific, feasible, and relevant studies.

2.4.4 Study selection

In the introductory literature review, only educational studies and books in the English language were included. The main relevance of these studies is that they give insight into the feedback practice in higher education.

A number of feedback definitions were found in literature, and the following two definitions were resonating with the researcher. They were from well-regarded articles that are popular, so these two definitions of feedback were used for identifying the relevant articles and books in the first structured literature review and also in this scoping review:

> *"a process whereby learners obtain information about their work in order to appreciate the similarities and differences between the appropriate standards for any given work, and the qualities of the work itself, in order to generate improved work" (Boud and Molloy, 2013a, p.6).*

> *"information about the gap between the actual level and reference level of a system parameter which is used to alter the gap in some way" (Ramaprasad, 1983, p.4).*

According to these definitions, not all articles on feedback were included. Although the tutors can be considered learners in terms of 'facilitation skills', this review only included feedback which is provided for the learners' development. Therefore, feedback about faculty evaluation and curriculum development or for any stakeholder except for students was excluded from this study. However, feedback about faculty development in terms of feedback-giving skills and students' perceptions of such skills was included.

In this scoping review, only educational studies in the English language on small group-based higher education and learning were included. Although 'small group' is a broader term than PBL, it is included because it may give relevant insights into PBL. PBL is considered small group learning (Edmunds and Brown, 2010; Dennick and Spencer, 2011). The following definition of PBL was used for identifying the relevant articles and books:

> *"at its most fundamental level is an instructional method characterised by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences" (Albanese and Mitchell, 1993, p.53).*

Again, feedback used for PBL tutors' evaluation and development is excluded. However, evaluations of feedback-giving skills are included because these can give an important understanding about what students prefer in their PBL tutorial groups.

Articles were not excluded by date of publication to ensure landmark studies are included regardless of how old they are and to evaluate how evidence in this area has evolved. Also, non-medical educational studies are included because they may give insight into how others may experience the feedback. In summary, only results about the feedback process in PBL were included (see Appendix 1).

2.4.5 Charting the data

Arksey and O'Malley (2005) explained that the following information should be extracted from the studies and charted:

1. The author(s), publication year, and the setting of the study.
2. Participant type (e.g. students or tutors).
3. Aim of the study.
4. The study's methodology.
5. The critical results.

2.4.6 Collating, summarising, and reporting the results

The data were synthesised according to the type of feedback. The analysis was then undertaken by qualitative thematic coding. This was supported by sub-headings to identify the different areas related to feedback and PBL (see Table 2.2 for the summary of the key themes). Another table was compiled to include the key aspects of key articles revealed by this scoping review (Appendix 3). The key aspects are the following: authors' names, publication year, aim of the studies, results and critical comments on these studies.

Table 2.2 The summary of the key themes

Themes	Sub-themes
The role of feedback in small groups and PBL	
Shortcomings in receiving feedback in PBL	
Feedback purposes	
Students' opinions and preferences	
The effect of socio-cultural factors on the feedback process	Culture
	Social interaction
The importance of the learning environment	
Modes and sources of feedback in PBL settings	Modes of feedback
	Sources of feedback

2.4.7 The results

The role of feedback in small groups and PBL

Feedback has been regarded as an important process in small groups and PBL according to several studies. Azer (2005) discussed the main challenges that may face the PBL facilitator and he suggested that constructive feedback is an effective strategy in supporting student discussions in the PBL tutorial. In addition, in terms of facilitation skills, Hmelo-Silver and Barrows (2006) examined two USA-based PBL tutorials in order to understand facilitation skills. By observing the videotaped sessions, the authors found that the facilitator asked the students to summarise and explain the concepts, which led to identification of the students' potential knowledge gaps and the support of the tutor's feedback. In addition, in terms of effective discussion during PBL, Visschers-Pleijers et al. (2006) explored the perspectives of first- and second-year university students in the Netherlands on the factors affecting their discussion. The authors recommended providing training to facilitators, where necessary, on how to give feedback effectively. Therefore, the abovementioned scholars agree on the importance of feedback in the PBL tutorial. However, as these studies did not focus specifically on feedback in their research, further exploration is required because it is central to the PBL tutorial group discussions (Holen, 2000).

One study undertaken by Hansford and Diehl (1988) in Australia of 32 trainee teachers aimed to examine the effect of the nature of feedback (i.e. whether it is positive or negative) on verbal

behaviour (i.e. being motivated to share more ideas after having received the feedback in the small group). They found that negative feedback made the feedback recipient more motivated to generate more ideas, while positive feedback had the opposite result. The authors explained: “in the positive feedback condition participants may have felt that they were being adequately and appropriately rewarded and thus did not try as hard to generate ideas during the discussions. In the negative feedback condition, the degree of uncertainty surrounding how they were being rewarded may have stimulated participants to increase their positive input in the form of ideas” (p. 492). Although this study focused specifically on small group and non PBL or medical education, it provides an insight into how feedback in small groups may affect student behaviours.

In a more specific health profession education setting, feedback on the development of problem-solving skills was explored by Medina et al. (2013) in a pharmacy school in the US. This study considered team-based learning, which is similar to PBL in that both are small-group based. It aimed to identify the ideal mode of feedback for students to develop their problem-solving skills. In a randomised controlled trial, they found that both written and verbal feedback allowed the students to improve their problem-solving skills. In Germany, a randomised controlled trial including 2,137 university students aimed to examine the effect of feedback intervention on learning outcomes (Krause and Stark, 2010). The researchers found that the students’ learning was clearly developed by the feedback received.

In a PBL setting, the role of feedback in promoting self-regulated learning was the topic of another study conducted in Uganda, Africa. By utilising qualitative focus groups and interviews with health professions students, Mubuuke et al. (2017) found that students used tutor feedback for activating prior knowledge, for reflection, and for designing a personal learning plan. It was stated by students in that study that feedback was a helpful process to identify strengths and learning gaps; this promoted a reflection process. According to this study, feedback is central for self-regulated learning in PBL settings.

Self-regulated learning was also an interest for another study based in a PBL setting in the USA. Dannefer and Prayson (2013) examined to what extent first-year medical students (32 in this study) self-regulate their professionalism by using formative peer- and tutor-written feedback. Through analysing both formative written assessment feedback that students received during the year (identified shortcomings) and summative assessment (as portfolio that students submit attaching self-selected evidence on how they progressed) at the end of the year, key findings were that the formative feedback helped students to self-regulate their professional behaviours. In addition, most of the

feedback received concerned interprofessional skills (such as respect for other group members) more than working habits (such as being punctual for tutorials).

The African (Mubuuke et al., 2017) and the American (Dannefer and Prayson, 2013) studies differ slightly. First, in their findings the former found the role of feedback to be in a cognitive process and the latter found it to be in a behavioural process. Furthermore, they targeted a slightly different population as the African study targeted a mixture of healthcare students, whereas the American study targeted only medical students. In addition, the American study investigated both sources of feedback (i.e. tutor and peer) while the African study was limited on the tutor feedback. Although these differences exist, both have found that feedback in PBL has a central role in developing self-directed learning; the central target of the PBL curriculum (Savery, 2006).

Therefore, these studies confirm that feedback affects students' cognition and behaviours. For this reason, feedback is an important process which should be considered in PBL and any small group facilitation. Although these studies provide insight into the effect and importance of feedback in small groups, they are not based on students' preferences and opinions, apart from the African (Mubuuke et al., 2017). The study by Dannefer and Prayson (2013) was approached through analysing the feedback received by tutors and peers. Although that approach is helpful to analyse students' experience, such personal experience and opinions would add more specific details regarding the feedback process.

Shortcomings in receiving feedback in PBL

Although feedback is found to be central in the educational process and more specifically in a PBL setting, other studies revealed some shortcomings in the experience of receiving feedback.

In a PBL setting, Alhaqwi (2012) explored male medical students' perception of the feedback importance and process in one of the Saudi medical schools. By adopting a cross-sectional questionnaire, the author found that 85% of the participants believed in the importance of the feedback; however, only 20% reported receiving regular feedback. Although this study was based on the PBL setting, it was limited only on the quantitative. This meant the author failed to further investigate key findings as to why e.g. students reported their preference for the written form of feedback, and the author did not investigate the reasons behind such preference. Furthermore, the study was limited to male students.

Regarding the importance of triangulating quantitative results with further qualitative data, a study by Perera et al. (2008) adopted a mixed methods approach and explored students' and tutors' perceptions of formative feedback in a PBL setting in Malaysia. The specific aim was to explore the extent of matching of the two populations' perceptions (i.e. students and tutors). They found that 75%

of tutors reported giving regular feedback to students, while 55% of students agreed. Also, 86% of students requested a discussion with tutors but only 25% were offered that discussion. Another shortcoming students reported was that they received the feedback late, after the exams and the marks had been revealed, which was unhelpful to manage and develop their performance in advance.

In Perera and colleagues' study, a mixed-methods approach investigating both students' and tutors' perceptions was helpful to reach the best-triangulated perceptions. However, there is a deficiency in describing the methods process, including the ethics and analysis process, since there is no explanation of how both sets of data were analysed, neither is there any mention of the sample size in the qualitative stage. Although this study is mixed methods, the authors limited the qualitative investigation to confirm and validate the quantitative results instead of further exploring reasons behind such statistical results (Cohen et al. 2011). In addition to these limitations, this study was limited to the tutor feedback and did not include other key source such as peer feedback, since PBL curriculum is based on a collaborative small group of members (Ertmer and Glazewski, 2006).

Therefore, through investigating students' and tutors' experience of feedback in PBL specifically through different studies, it was revealed that students believed in the important role of feedback with a deficiency in receiving qualified feedback from the tutors. All the literature discussed above focused on the tutor feedback, except Dannefer and Prayson's study (2013), and approached either with a quantitative (mostly by the Saudi-based studies) or qualitative approach, except in Perera and colleagues' study, a mixed-methods approach was adopted.

In addition to the revealed experience of how feedback is important in PBL and how much (i.e. the quantity) it is delivered to students, the next sections focus on content quality of the feedback received and how effective it is.

Feedback purposes

Feedback purposes and levels (referred to as 'types' in some of the literature) are important considerations in medical school PBL settings. Feedback has different purposes, e.g., to student what needs to do better. Hattie and Timperley (2007) categorised feedback as having four levels (i.e. different purposes): Task, process, self-regulation, and personal (see Appendix 2 for more detail). Furthermore, to promote self-regulation, Nicol and Macfarlane-Dick (2006) synthesised—based on the existing literature—important principles to promote self-regulation learning through feedback (the principles are explained in Appendix 2). By applying these literature conclusions (Nicol and Macfarlane-Dick, 2006; Hattie and Timperley, 2007), feedback quality can be promoted.

Understanding the quality of feedback is important. Boud and Molloy (2013b) stated that a common misunderstanding of good feedback is that most tutors limit their feedback only to task-related description. However, as illustrated by the literature review, good feedback is more than that, and this is further explored in this research project.

As discussed in the introductory part 1 of the literature review, much of the existing research in this area revealed student dissatisfaction with insufficient tutor feedback. This insufficiency was caused mainly by feedback which neglected to explain the desired standards and development plans; instead, it only focused on limited purposes of feedback (e.g. what went wrong in performance) (Carless, 2006; Giles et al., 2014; Sanchez and Dunwoth, 2015; Arts et al., 2016). Instead, feedback has more than one purpose; it tells what went wrong and explains why, i.e. attribution of failure and success, as described by Hattie and Timperley (2007) (see Appendix. 2).

In a PBL setting, Webb and Moallem (2016) designed a conceptual model for effective feedback processes based on their literature review. They then applied it to an online graduate course in instructional technology to assess its effectiveness. By using a mixed-methods approach and including only 11 students, they found that a balance between three types of feedback was effective and appreciated by students in terms of their development. These three types are: feed-up (what the good performance is), feedback (closing the gap between the standard and current work), and feed-forward (supporting the student to consider beneficial steps to improve future performance). Another study conducted by Coll et al. (2013) analysed students' and tutors' experiences in giving feedback in online small group learning. They found that tutors and some students gave a fair balance of task- and process-related feedback through analysing the submitted feedback (by the subjects).

These two research teams (Coll et al. 2013; Webb and Moallem, 2016) studied a key and relevant aspect of this PhD. research: exploring feedback in small groups. However, neither of them were undertaken in a medical education setting. Although the first focuses on PBL (Webb and Moallem, 2016), the second focuses on small group learning in general (Coll et al. 2013). In addition, the PBL discussion groups in both studies were online and not face to face. Moreover, only a small number of participants were included in these studies.

The study by Perera et al. (2008) which was based on a medical PBL curriculum, as reviewed previously, explored such interesting statistics about students' experience regarding the received feedback content. The authors found that 90% of students needed detailed explanation of why such a grade was given, providing students with feedback about the expected standard, and only 38% of tutors gave that to students. In addition, they found that suggestions for improvement (i.e. how to do better) was requested by 93% of students, but only 43% of tutors made those suggestions. The study by Alhaqwi (2012) based in a PBL setting in Saudi Arabia, there was little data about feedback content

and purposes; however, the participants (i.e. students) believed that effective feedback is balanced, relating both positive and negative performance.

Regarding the American study, by Dannefer and Prayson (2013), they found that both tutor and peer formative feedback developed students' skills in self-regulation in PBL, as previously discussed. Interestingly, they found peers' written comments often suggests "how to improve performance". However, the authors could not specifically investigate the effect of that feedback aspect on students' self-regulation skills.

Another study conducted in a PBL setting, in an Arabic gulf country (United Arabic Emirates), Eladl et al. (2018) examined the effectiveness of delivering two ways of feedback (tutor-students), i.e. both stakeholders give the other feedback, in a formative assessment. They adopted mixed methods including questionnaires, focus groups, semi-structured interviews, targeting both tutors and students. They found that both stakeholders were satisfied by that experience as 83% of students reported a positive experience of receiving tutor feedback explaining how to improve. This study gives insight into the feedback process in PBL although the study's focus was to investigate the students' feedback to tutors and this is out of this PhD research interest. Although this study used a mixed-methods approach, the qualitative investigation did not explore influencing factors behind the statistical results, rather, it simply confirmed them. This study's weakness and limitation are further listed in Appendix 3.

Thus, there are different studies that explored PBL students experience of feedback. Different and varied results are found from these studies, as some reported positive experiences and other did not. Therefore, the feedback process is not always consistent.

Little research adopted mixed methods and investigated different stakeholders' perceptions. Only two reviewed studies utilised mixed methods and targeted both populations (i.e. tutors and students) (Perera et al. 2008; Eladl et al. 2018). However, neither of these two studies explored influencing factors and reasons behind the students' experience via qualitative approaches. In addition, the studies did not investigate how such feedback purposes developed self-regulation learning skills, a key objective of the PBL curriculum. The study by Dannefer and Prayson (2013) found that students received peer feedback explaining how to improve, and by the end of the year students developed self-regulation learning, but there is no evidence about the specific effect of feedback on self-regulation skills, as discussed previously. Therefore, there are some gaps in current literature that require further research.

Students' opinions and preferences

To understand and explore students' opinions on and experiences of feedback in a PBL setting, Mubuuke et al. (2016a) undertook an exploratory study which included interviews and focus group discussions with third-year students studying for different health professions (medicine, nurse, pharmacy, and dentistry) in Africa. They found that students prefer and appreciate 'comprehensive' feedback which is not only on their construction of knowledge, but also on their professional skills (e.g. communication skills).

In terms of students' preferences and the potential factors affecting them, Holen et al. (2015) explored students' positive and negative preferences on the PBL approach and related them to sociocultural and personal factors. By surveying 449 medical students in different cultural settings (US, Europe, and Asia), they found that sociocultural and personal issues affect PBL preferences. For example, students from Nepal have less of a preference for PBL because of its focus on student-centred learning, which is not popular in Nepal. In addition, they found that female students and those with a sociable personality had positive attitudes to the PBL approach. Although this study did not focus on the feedback process, it confirmed that there are sociocultural factors which might affect students' preferences regarding PBL; thus, it supports the importance of considering students' thoughts and opinions, and more specifically, exploring potential factors influencing their experience. This importance is confirmed by a quantitative study (Alhaqwi et al. 2012) that explored 186 (64% of the whole population) male Saudi students' perceptions regarding 'the barrier of receiving effective feedback' in PBL. They found that, by adopting a cross-sectional questionnaire, 52.7% of students believed in the existence of barriers relating to experience that affect effective feedback.

The effect of socio-cultural factors on the feedback process

a. ***Culture***

There are studies found the influence of culture on the feedback process, as discussed in the introductory literature review. In a PBL setting, the context of assessment was found as a cultural factor influencing the feedback process (Harrison et al., 2013; 2014; 2016). As discussed in the introductory literature review, Harrison et al. (2013) found that low-achieving students made less of the feedback offered in the summative assessment. Harrison et al. (2014; 2016) explored the reasons behind students' reactions to that offered feedback. Harrison et al. (2014) concluded that the culture

of summative assessment that focuses on pass and fail had a negative effect on students' use of the offered feedback. Harrison et al. (2016) found that shifting from an assessment culture that focuses on behaviourist principles, such as reward, to constructivist principles, such as scaffolding and giving student an active role, improved the feedback experience.

Al-Wassia et al. (2015) explored the cultural challenges in the formative assessment application in Saudi Arabia by using a mixed-methods approach. They found that Saudi medical students faced challenges in dialogic feedback with staff because of barriers caused by a hierarchy, and students focused on grades as a priority rather than engaging with feedback.

Alhaqwi et al. (2012) in survey study found that 74% of students in Saudi Arabia did not believe that culture is considered a barrier in the feedback process in PBL.

These two studies (Alhaqwi et al. 2012; Alwassia et al. 2015), although both based on the same country, they reached opposing findings. In addition, they slightly differed as to which population they targeted (clinical students in Alwassia et al. (2015) vs all students including both preclinical and clinical students in Alhaqwi et al. (2012)). Furthermore, they applied different methodologies as Alwassia et al. (2015) adopted a constructivist approach using mixed methods and targeting both students and clinical staff, but Alhaqwi et al. (2012) adopted a positivist approach limiting their method to questionnaire only and targeting only students. Therefore, these differences might lead to different results.

These different findings lead to the conclusion that influence of culture on feedback experience requires further investigation. In addition, cultural influence on the peer feedback might deserve further investigation too, specifically in the PBL context.

b. ***Social interaction***

According to the effect of socio-cultural factor on feedback in PBL, there is a study by Mubuuke et al. (2016b) explored the factors affecting students' utilisation of tutor feedback in a PBL setting in Africa. By adopting an exploratory qualitative approach and by using interviews and focus group discussions, the researchers found that social and cognitive factors affect feedback utilisation. For example, a tutor's interpersonal and communication skills were considered social effects, and feedback which is overloaded, unfocused, and unspecific and the feedback received from tutors who were not subject specialist was perceived as a cognitive factor affecting feedback utilisation.

Mubuuke et al. (2016b) revealed key findings; however, these qualitative findings were limited to the tutor feedback excluding that influence on the peer feedback. Also this study has other limitations. It only uses a qualitative approach based on a small sample and the scholars did not include the facilitators' perspectives, which could add value to the findings. Therefore, future research should employ a mixed-methods approach (a survey and qualitative interviews and focus group discussions) including tutors' perspectives, which will add more depth and value to the field.

The importance of the learning environment

Students' preferences and perspectives and the factors potentially affecting them are important for future research. This is especially true of medical education. Genn (2001) explained:

> "The environment is an important determinant of behaviour. Environment is perceived by students and it is perceptions of environment that are related to behaviour. The environment, as perceived, may be designated as climate. It is argued that the climate is the soul and spirit of the medical school environment and curriculum. Students' experiences of the climate of their medical education environment are related to their achievements, satisfaction and success" (p. 445).

Antepohl and Herzig (1999) explored German students' preferences of PBL compared to a more traditional lecture-based learning. The authors conducted a randomised controlled trial including 123 students and found that students prefer PBL to traditional education and described it as an effective learning method. However, in a different setting, Australia, first-year medical students' experiences of the PBL approach were explored by Hanlon et al. (1995). By using open-ended evaluation, they found that there is no clear preference for the PBL approach. The students complained of time-consuming PBL sessions and insufficient guidance. Therefore, students' preferences for PBL may differ from setting to setting. Exploring the factors affecting these preferences is important for future research.

A study conducted in the UAE aimed to explore students' evaluations of their PBL tutors (Das et al., 2002). Because the tutors' cultural backgrounds were different from the students', the researchers found that low scores were given for the tutors due to their focus on the self-study approach. This approach was not expected by the students. Rather, they expected more support from the tutor. The authors concluded that sociocultural factors were important in this study. While that is true in the UAE, a study conducted in Canada examined students' and tutors' perspectives on PBL compared to traditional medical education (Kaufman and Holmes, 1996). By means of a questionnaire, they found that both tutors and students preferred PBL to traditional learning. Moreover, they found

that students specifically appreciated the tutors who do not intervene much during the tutorial and believe that it is a learner's responsibility to study independently.

In terms of Middle Eastern culture, a study undertaken by Frambach et al. (2012) confirmed the findings of Das et al. (2002). This study examined the differences between three different cultures (western, Middle Eastern, and Asian) regarding self-directed learning in the PBL approach. They adopted a qualitative case study approach and undertook semi-structured interviews with medical students and tutors. One of their most important findings is that Middle Eastern students experience a barrier in terms of becoming self-directed learners caused by the teacher-centred learning tradition to which the students were accustomed in their secondary education.

Modes and sources of feedback in PBL settings

a. ***Modes of feedback***

Students' preferences in terms of assessment and feedback in PBL were also sought. Thome et al. (2006) sought student and tutor experiences of using the portfolio feedback mode in a PBL setting in Sweden. The findings reported that the students preferred it to traditional assessment. Tutors reported that discussion skills with students and giving feedback were worth development. In a different PBL setting, Parikh et al. (2001) sought students' preferences of the modes (types) and sources of feedback in five medical schools in Ontario, Canada. By using a questionnaire, the author found that face-to-face individual feedback was the first preference of all five medical schools followed by face-to-face group feedback and peer feedback. In contrast, in a quantitative study by Alhaqwi (2012) in Saudi Arabia, PBL students preferred written feedback to verbal feedback, and the author mentioned that "this form [written] may be associated with less tension when compared with the verbal" (p. 1055). However, this attribution is poorly justified and investigated since this study was limited to the quantitative enquiry.

In a more comprehensive study, there were mixed preferences between these two modes highlighted by Malaysian students (Perera et al. 2008). 85% of the students preferred written feedback for the written assignments and verbal feedback at the end of the PBL tutorial. Although this study adopted a mixed-methods enquiry, the reasons for these preferences were not explained.

Therefore, in summary, students might prefer one type of feedback to others, even though they all are beneficial. Such reasons and factors behind such preferences would help policy-makers to identify how such feedback practice could be developed further.

b. ***Sources of feedback***

Regarding the source of feedback**,** peer assessment feedback has been implemented in the PBL setting. Papinczak et al. (2007) explored medical students' perceptions of peer assessment in a PBL setting in Australia. By means of qualitative action research, the students expressed mixed positive and negative experiences of peer assessment. Many students perceived that the assessment criteria were irrelevant to the learning processes in PBL groups. In addition, the students reported that peer assessment is new and unfamiliar and, therefore, they need more time to become accustomed to it. Furthermore, a minority of students were not motivated to assess their peers and gave full marks to escape responsibility. However, a small number of students reported that peer assessment is beneficial for their future as medical professionals. Moreover, this study confirmed the positive effect of peer assessment on self-directed learning (see page 29).

Similarly, the American study by Dannefer and Prayson (2013) found that peer feedback with tutor feedback supported students to self-regulate their professional behaviours within PBL tutorials. According to this study, peer feedback was found to give areas of improvement different to these that tutors gave. This confirms that peer feedback could fill a gap that tutor feedback alone might leave.

A study undertaken by Kamp et al. (2014) examined the effect of peer assessment on individual contribution within the PBL groups and their academic achievement. This study involved 242 first-year health science students at Maastricht University in the Netherlands. By using a controlled study, they found that peer assessment did not develop the individual's contribution; however, it improved their academic achievement. Therefore, implementing peer feedback could have a positive effect on students' learning.

In a different PBL setting, in Bahrain, medical students' experiences (n=55) with peer assessment were also explored by Tayem et al. (2015). They used a questionnaire and found that most students reported a positive attitude to peer assessment in PBL as they felt it developed their learning and self-assessment skills (73%), which supports the findings of Papinczak et al. (2007) and Dannefer and Prayson (2013). Also students reported that peer assessment developed their participation in the group (71%), identify learning needs (64%) and other positive outcomes.

These reviewed studies have varied results according to different settings and experiences (worldwide). They conclude that practising peer assessment has both advantages and disadvantages. It may develop self-directed learning by using specific criteria to assess peers, it may result in unreliable assessments, such as those caused by friendship issues. Therefore, exploring such situations

might help facilitators in their consideration of peer assessment development specifically in Saudi Arabia where PBL peer feedback is rarely examined.

Conclusion

In conclusion, this scoping review has revealed many relevant aspects of the feedback process in PBL and small groups. The research identified a small number of studies that explore feedback in the PBL setting in the Gulf countries (Middle East). However, these studies have a number of weaknesses and limitations. There is a clear trend that the Gulf-based studies have used quantitative inquiries and, thereby, the process lacks deep subjective experience. Even though the Emirates study (Eladl et al. 2018) adopted mixed methods, it has some limitations and weaknesses. It only investigated the feedback quality and did not investigated which factors influence it, i.e., the feedback quality. Also, there are some weaknesses in the process of quantitative and qualitative inquiries, e.g., the authors did not mention which SPSS test was used and how qualitative sample was chosen, i.e., inclusion criteria (see Appendix 3). Therefore, there is limited evidence in this area of research, especially considering the earlier discussions on the effect of the culture of learning environments on the learning process. In addition, it is necessary to explore students' experiences in implementing effective feedback in medical PBL settings and to explore the differences between students at different stages and also of different genders in PBL medicine courses where males and females are taught separately. Furthermore, even though there is an extensive literature on good practice in feedback, there is very little work investigating what influences the quality of feedback within PBL or a framework for best practice, especially within Saudi Arabian educational environments. Most of the literature is sit in the western context, but the learning environment where this project will be conducted may have unique considerations. As explained in the introduction, this PhD researcher aims to develop a piece of work that considers the context of Saudi PBL schools rather than adapting an externally developed framework based on different cultural contexts, informed by the Southern Theory. By applying mixed methods research, participants will have opportunities for free comments (in the questionnaire) and conversations through focus groups and interviews that will help the researcher to examine the local context.

Therefore, there are a number of questions to be further explored: 'how do different medical schools in Saudi Arabia engage with the PBL feedback process?' 'What modes and sources of feedback do students prefer in PBL settings in Saudi Arabia?' In addition, it is important to consider: What feedback quality do students give and receive in PBL settings? What is the effect of culture on stakeholders' experiences? What other factors influence the feedback process?

Chapter 3: Methodology

3.1. Introduction

The first step in discussing methodology is a consideration of the philosophical bases that underpin choice of research methods. This is important because it affects the practice of research and decision about which methodology is the most appropriate for their study; for example, whether to take a quantitative, qualitative, or mixed-method approach (Creswell, 2014). Furthermore, Bunniss and Kelly (2010, p364) argue that the research methodology guides the researcher about the nature of research design in addition to choice of research methods.

Creswell (2014) refers to these philosophical bases as 'philosophical world views' or 'paradigms'. Guba and Lincoln (1994, p.105) defined a paradigm as "a basic system or worldview that guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways". According to Krauss (2005), the term 'ontology' refers to the philosophy of reality and 'epistemology' refers to how that reality can be known and understood. The term 'paradigm' is used in human sciences, particularly to describe the philosophical view on which research might be based (Grix, 2010).

According to Lincoln et al. (2011), the current key methodological paradigms are: positivism, post-positivism, critical theory, and constructivism. Creswell (2014) explained that constructivism is usually discussed as an interpretive paradigm. Therefore, these two terms are used interchangeably. The next part of this chapter will include an in-depth discussion of these different paradigms.

3.2. Positivism

According to Lincoln et al. (2011), positivism has unique features. Positivist researchers consider knowledge as verifying a hypothesis as a fixed fact. Thus, positivists believe in a single reality: there is only one truth that can be studied. The aim of their research is to predict reality. In terms of its epistemology, positivists consider objectivity as the main strategy of thinking and studying. They deny subjectivity and there is no opportunity to interact with the subjects of the study. As will be expanded upon below, objectivity tends to adopt a quantitative methodology e.g. surveys and experiments (Greenfield, 1975). Consequently, they base their studies on numerical data to prove their hypotheses.

Although this paradigm is a basis for a great deal of research, it has limitations and weaknesses, especially for the social sciences. Cohen et al. (2011) criticised this paradigm as it cannot describe the different experiences of the subjects in their settings in depth. Therefore, detailed interpretation of a human's subjective experience is unachievable in positivist research. Habermas (1974) explained that the paradigm does not study different important opinions and beliefs. Thus, Habermas (1974) believed that positivist research has a weakness of its ability to reveal many interesting points in human lives. This paradigm has a similar limitation to behaviourism as it has weaknesses in its ability to allow for interpretation of the causes of such behaviours (Chomsky, 1959). Therefore, considering different, alternative paradigms (e.g. an interpretive paradigm) is important to balance these limitations.

3.3. Quantitative research

As explained above, positivist researchers adopt research based on the quantitative approach. According to Creswell (2014), it is used to test objective theories by studying the relationships between different variables. By using instruments, numerical facts can be ascertained and then statistically analysed (Muijs, 2011). As noted above, this is based on the positivist paradigm as it seeks one key truth which is generalisable. A common quantitative methodology is a survey, which "provide[s] quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2014, p. 13). This methodology mainly applies to the cross-sectional or longitudinal approach where data is collected by using questionnaires or structured interviews, leading to the generation of theories about a population based on a sample (Fowler, 2009).

Surveys are useful when researchers need to do the following: examine a correlation (e.g. a relationship between an experience and scores), study a big sample to make a generalisation (e.g. students' experience of peer feedback in Saudi medical schools), or confirm or refute a hypothesis about a specific population (e.g. giving peer feedback leads to positive educational outcomes) (Morrison, 1993). According to Cohen et al. (2011), an exploratory survey is the first examination of a specific population to generate a hypothesis or it can be confirmatory when it is already examined. In addition, Weisberg et al. (1996) and Aldridge and Levine (2001) agreed that surveys are useful when there is a need to examine beliefs, preferences, opinions, and experiences.

Therefore, this approach is effective and useful in terms of answering the main question of this research regarding students' preferences and opinions on the feedback process in PBL in Saudi

Arabia. However, there are limitations to this approach in that the reasons behind the positive or negative student preferences cannot be explored with a quantitative approach alone.

As Cohen et al. (2011) explained, surveys cannot provide a complex explanation of why populations behave in a particular way or the reasons behind participants responses. To help with this, it is important to examine the Interpretivist paradigm.

3.4. Interpretivism

The interpretive paradigm does not believe in one singular reality; rather, it believes that there are multiple truths for different subjects according to their different experiences in a singular setting (Lincoln et al., 2011). Instead of considering objectivity in its epistemology, interpretive research seeks to understand subjectivity, usually by adopting qualitative methodologies, as will be further explained below. According to Blumer (1969), people give different meanings to their experiences. Thus, it is important to consider these differences in social research. Cohen et al. (2011) pointed out that it is necessary to seek the truth about situations directly from the participants rather than from the researcher.

Similar to positivism, this paradigm has some limitations and weaknesses. According to Bernstein (1974), subjective speech might be misleading and incomplete; therefore, qualitative interviews might be inaccurate. Because of its dependence upon subjectivity, insufficient objectivity may lead to insufficient discrimination of important patterns in human life (Allen, 1985). Therefore, this paradigm may not be used to answer questions which require objectivity i.e. numerical facts about important patterns in human social life.

3.5. Qualitative research

According to Creswell (2014), a qualitative approach is useful for research which explores and understands different subjects in a particular setting. In the setting, the data is gathered to generate themes depending on what the participants say. At this stage, the researcher interprets their different understandings using analysis tools that helps to maximise credibility and authenticity.

Maxwell (2005) concluded that, while quantitative researchers are interested in examining the relationships between different variables, qualitative researchers explore the reasons for these

relationships i.e. how and why an outcome happens. “Quantitative research can tell us correlations, how much, whether and ‘what’, whilst qualitative research can tell us the ‘how’ and ‘why’ – the processes – involved in understanding how things occur” (Cohen et al., 2011, p. 227).

Both of the discussed paradigms and methodologies have their own usefulness, strengths, and limitations. They have contrasting beliefs and focuses. Adopting only one of these was insufficient to achieve the research objectives which include the exploration of stakeholders’ experiences and perspectives. Therefore, a mixed-method research approach was considered the most comprehensive approach that best fits the research objectives.

3.6. Mixed-method research

Mixed-method research is a process which involves more than one approaches or methods. Greene (2008, p. 20) explained that “a mixed method way of thinking recognises that there are many legitimate approaches to social research and that, as a corollary, a single approach on its own will only yield a partial understanding of the phenomenon being investigated”. Also, Creswell (2014) concluded that “the core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone” (p. 4). Instead of being objective like positivism or subjective like interpretivism, the pragmatic paradigm, the theoretical basis of mixed-method research, believes in a combination of these two paradigms (Morgan, 2007).

3.6.1. Why a mixed methods approach?

Cohen et al. (2011, p. 25) stated that “mixed methods research addresses both ‘what’ (numerical and quantitative data) and ‘how or why’ (qualitative) types of research questions” (Watkins & Gioia, 2015). In addition, Denscombe (2008) pointed out that mixed-method research can produce the most comprehensive picture of phenomena and suggested that this methodology can aid in the sampling process.

Therefore, the mixed-method research approach was most suitable for this research. This is because the research question needs both numerical and complex data (Tashakkori and Creswell, 2007). Although this methodology is beneficial when a research question needs comprehensive data collection, it does pose some challenges to researchers. According to Creswell (2014), It takes more time for data collection and results analysis than a singular method could take.

According to Teddlie and Tashakkori (2009) and Creswell (2014) , there are different mixed-method research approaches which can influence the research question differently. Tashakkori and Creswell (2007) explained that a parallel mixed methods design, conducting quantitative research in parallel with qualitative research, has a different way of questioning from a sequential mixed methods design. They state that the former has independent questions at the beginning of such an inquiry, whereas in a sequential design, the second inquiry question (either quantitative or qualitative) is based on the first inquiry result. In the current inquiry, the researcher adopted the explanatory sequential mixed methods design beginning with a quantitative enquiry and followed up with qualitative enquiry, as explained by Creswell (2014). He began with a quantitative questionnaire. Then investigated why the questionnaire data is how it is through qualitative methods of focus groups and interviews. The researcher aimed to quantitatively seek students' opinions and preferences first before exploring the reasons for their preferences, so the qualitative research question was shaped by the quantitative results (Watkins & Gioia, 2015).

Watkins and Gioia (2015) state that this design aims to explain the quantitative results using the qualitative data, as well as using the quantitative results to guide the direction of the qualitative research. This design has some strengths according to Watkins and Gioia (2015). It has a nature of pureness for each stage, i.e. starting with quantitative only, once completed, then conducting the qualitative phase, which helps the researcher to report each one separately, ultimately easing the writing. Furthermore, this design helps to explore the conclusions from quantitative results qualitatively, thus a general understanding of the research problem comes from analysing the quantitative data. Qualitative data analysis gives depth to this understanding; by explaining such statistical numeric results (Creswell, 2014). Especially when unexpected quantitative results emerge (Morse, 1991), as in this thesis, when the quantitative stage revealed unexpected statistics regarding students' experiences in the feedback process (see results chapter); this use of mixed methods can deepen understanding.

However, Watkins and Gioia (2015) mention some challenges the researcher might face when adopting such a design. Since it has two separate stages, it requires a long time to implement; for example, data collection for this study began in September 2017, finishing by analysing the qualitative data in September 2019. Moreover, the study participants were medical students, so their vacations (including long summer vacation) meant data collection took even longer. Additionally, a government process was required to fund the qualitative stage, also affecting the study duration.

Chapter 4: Methods

4.1 Introduction

As discussed above, this Ph.D. research adopted a mixed-method research approach, beginning with the quantitative method; the survey was the starting point for data collection. Focus groups and semi-structured interviews were then conducted to qualitatively explore the quantitative data.

4.2 Survey

4.2.1 Introduction

Cohen et al. (2011, p. 256) defined surveys as gathering "data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing condition can be compared, or determining the relationship that exist between specific events". The data gathered by a survey is often quantitative and numerical. Creswell (2014, p. 155) defined a survey as providing "a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population". Therefore, a survey was a suitable method in this research as it aims to quantitatively explore the nature of existing students' experiences in the PBL approach in the chosen setting in Saudi Arabia. This aim lead to a generalisation to the target population from the selected sample; therefore, the researcher was able to draw a conclusion about the clear differences between them.

Surveys have different applications. They can be longitudinal, examining a particular phenomenon on a particular population at different points in time. They may aim to examine causes and effects and are therefore conducted at two different times. On the other hand, a cross-sectional study examines a particular phenomenon in a particular population but at one time (a snapshot). This research adopted a cross-sectional approach rather than a longitudinal approach because the latter is more suitable for studies aiming to explore change over a long period of time (Gorard, 2001) and this research is time limited.

The survey instrument that was used in this research was a questionnaire. The questionnaire development was informed by the literature review. It is not an existing questionnaire from a relevant prior study and neither an adaption thereof (Appendix 4). As will be explained later, this questionnaire was field tested and further refined as shown in Appendix 6.

4.2.2 Aims and Objectives

The questionnaire comprised 27 closed and open items aiming to determine how different medical students in Saudi Arabia experience the PBL feedback process. The question focused specifically on the modes (verbal vs. written), sources (tutor vs. peer), and purposes of feedback experienced by students in Saudi Arabian medical schools.

4.2.3 Settings

It was important to decide which medical schools should be included in this project. The chosen setting for this research is every medical school which practise PBL in Saudi Arabia. As the aim was to explore the feedback process in PBL, only medical schools which adopted and practiced this teaching method were included in data collection.

The researcher visited the Ministry of Education official website, searching for the names of all medical schools available in Saudi Arabia including both government and private. Then, the researcher checked each of these medical school's website whether it applied PBL, finally identifying twenty appropriate medical schools.

As will be explained later, only six PBL medical schools responded to the researcher's invitation. Four of these schools are public [the first, second, fifth and sixth medical schools] and two are private [the third and fourth medical schools]. In all six medical schools, the PBL curriculum is hybrid and integrated with in-class lectures. Also, PBL tutorials are conducted face-to-face, males and females separately. All the medical schools share a similar programme length: six years followed by one year of internship, as highlighted in the introduction chapter (see page 14). However, they deliver different curriculums; each school has its own internal curriculum committee that determines the curriculum content.

4.2.4 Sample

Sampling is a critical process which every researcher should consider in their research. A 'sample' can be defined as "a small part of anything which is intended to stand for, or represent, the whole" (Wellington, 2015, p.116). One of the requirements for any sample is that it should be representative of the intended and examined population. Although representation is important, it is impossible to have a sample that is a perfectly representative (Wellington, 2015). Indeed, the sampling process has an important effect on the validity and reliability of the research.

The first step in the sampling process is defining a sampling frame, which is simply a decision on who would be included in and excluded from the study depending on specific criteria and characteristics which should be available in the sample (Fowler, 2009). In this research, there was a sampling framework, which includes students (male or female) who had encountered a PBL approach. To understand the influence of the curricular ethos on the feedback process, it was important to include students at different stages of the curricula in the study. The researcher included first, second, and third year medical students from all of the medical schools recruited. Tutors who have had at least one year of experience in PBL facilitation were included in this study.

The second step involved selecting the individuals to be included in the sample. There are two different approaches which may be taken: probability and non-probability sampling (Fowler, 2009; Wellington, 2015). Probability sampling refers to the situation in which all of the population has a similar chance of being included in the sample; for example, simple randomisation and stratification. However, non-probability involves seeking a particular group. According to Wellington (2015), the former is more suitable for quantitative research, while the latter is often more appropriate in qualitative research.

This research started with a quantitative method (survey) followed by a qualitative method (interviews and focus groups). In the survey, a large sample size was intended in order to enhance the study's reliability (Cohen et al., 2011). Probability sampling was used. To achieve the largest possible sample, all students were given a questionnaire in a single stage. There were several strategies taken to enhance the survey response rate, which in turn enhanced the study's reliability (Cohen et al., 2011). These strategies are further described later in the section of data collection (see page 78).

4.2.5 Best practice in questionnaire development

The questionnaire development had several stages. The first step was to develop the questionnaire as informed by the literature review. The next step was to field test this new questionnaire (appendix 4).

Field test aims to ascertain that potential users of the questionnaire understand the questionnaire and find it usable and relevant. It also helps to evaluate the clarity and meaning of individual questionnaire items as perceived by potential respondent. A field test can tell the researcher, what needs to be added to, omitted from, or edited in the questionnaire. The test involved four steps: first, conduct a field test with an expert who has read every item on the questionnaire and ensured that all items are easily understandable. Also, that expert had a beneficial role to check how the items (the questionnaire elements) reflects the research aim and objectives. The questionnaire was then presented to a small group of medical students. This group of students (participants) need to be from the people that questionnaire is intended for (i.e. students studying through a PBL approach). Therefore, Sheffield medical students were identified as a suitable group of people who have experience of PBL. This group of students were then interviewed as a group to determine any necessary changes to the questionnaire.

Third step was, then, translating the questionnaire to the Arabic language to have a form containing both languages. After that, the translated version was presented to Arabic speakers (not from the study population) followed by a group of Saudi medical students. These field test processes are discussed in more detail later (page 73).

To ascertain the validity and reliability of the questionnaire it was important to conduct a pilot study. “A reliable survey instrument is one that gets consistent results; a valid one obtains accurate results” (Fink, 2003a, p. 4). Therefore, a reliable questionnaire is one which, if used at a different time, it will give similar results and statistics and one which will be valid when it gives an accurate answer to the research question.

According to Cohen et al. (2011), piloting a questionnaire can help the researcher to develop the instrument’s comprehensiveness because the researcher might otherwise miss some important issues and variables of which he is not aware of. In addition, other authors recommend piloting the questionnaire to develop its validity and reliability (Oppenheim, 1992; Morrison, 1993). Piloting is considered useful for examining how clear the items are to the participants and for receiving feedback regarding the items’ validity and formats. Piloting is important for every aspect of the questionnaire (Oppenheim, 1992).

Other considerations supporting the validity of quantitative data collection approaches include good sampling, proper instrument choice, and application of appropriate statistics to interpret the data (Cohen et al., 2011). The researcher ensured that all of these suggestions were met, as will be described later.

Fink (2003a) and Creswell (2014) suggested that the questionnaire's items should be related to the research concepts and variables. This study's questionnaire's items were developed by the researcher in consideration of the research aims and objectives and informed by a literature review.

According to Fink (2003b) and Cohen et al. (2011), the questionnaire's items can be either closed or open questions or both. Closed questions can be in different forms including dichotomous items, multiple choices, rank ordering, and rating scale. In the closed question format, the participants choose one of several choices. This helped the researcher to make a comparison between different groups in the sample (Oppenheim, 1992). This was critical for the research, as one of the aims is to explore differences of opinions at different levels between first- and second-year students, and settings. On the other hand, open questions let participants use their own words to qualify relevant and important points which isn't possible through the more restricted, closed items (Cohen et al., 2011). Both forms have advantages; thus, the researcher used both of them in the questionnaire to enhance its comprehensiveness. Different closed questions were posed for relevant purposes.

Dichotomous items were also used in the questionnaire. Dichotomous items asked participants to choose one of two restricted choices, such as gender and yes or no questions. According to Fink (2003b), it is important to be familiar with the population being investigated to avoid some unimportant dichotomous items. For example, all of the student participants are Arabic, so items asking whether they are native Saudis or not are additional and unimportant in terms of addressing the research question. In this research, dichotomous items, such as gender, were applied only if they are relevant.

Rating scales were also used in this study's questionnaire. Rating scales were used to seek independent values for one single variable (Ovadia, 2004). For example, this research sought students' preferences regarding different feedback modes and sources in the PBL approach; for example, a rating scale was utilised to determine student's preference to written feedback or face-to-face feedback.

In addition, the researcher made efforts to ensure that the language of the items is understood by the participants. Cohen et al. (2011) pointed out that a researcher might be an expert in a field, but that does not guarantee that the participants have sufficient background in the research

problem. In this research, feedback terms such as 'process-related feedback' might be confusing for students; therefore, the researcher used language which would be easy to understand. As the questionnaire was developed in English and then translated to Arabic; it was important to ensure that the students sufficiently understood the items after translation.

Regarding the mode of the questionnaire distribution, the researcher adopted an electronic questionnaire as a tool for collecting the data, considering a paper form for second-line use, that is, the medical students were invited to complete the electronic version and offered a paper form in case they preferred that format. The selection of an electronic form as the primary form of questionnaire is supported and critically discussed by the literature, as explained below.

Using a web-based questionnaire is common in social science research as stated by Fox et al. (2003) and has certain advantages. It is less costly than the paper form, and its administration is also easier. Furthermore, outside the area of social science research, this form has been preferred also for the speed of response (Shannon & Bradshaw, 2002; Fleming & Bowden, 2009; Greenlaw & Brown-Welty, 2009). Furthermore, this form allows a respondent to skip options, as this can be incorporated into the questionnaire design (Fleming & Bowden, 2009; Sexton et al. 2011), which is not easily done through a paper form. Although these articles are not based on medical education, it gives a comparison between mail and electronic survey which can also be applied in educational research.

However, the literature also outlines a number of points relevant for the implementation of questionnaires. Although using a web-based survey is useful for a high response rate compared with a paper-based one in social research (Greenlaw & Brown-Welty, 2009), other social researchers reported a high response rate from a questionnaire sent by mail (Converse et al. 2008; Jacop, 2011). Nonetheless, Carrozzino-Lyon et al. (2013) found that the response rate of administering mail and electronic surveys was comparable, but the electronic version response was more rapidly responded to and returned. Therefore, there are conflicting opinions regarding the response rate using a web-based questionnaire versus paper form.

Considering how much of the population can access the web-based survey is important (Fox et al. 2003). In other words, it is important to consider the coverage of the electronic questionnaire in such a population. The researcher should be mindful of the attributes of the participant group (Couper et al., 2004). For example, Greenlaw and Brown-Welty (2009) and Graefe et al. (2011) reported that younger and educated people use the internet frequently, so this behaviour and familiarity with the internet influences such desire to respond electronically (Kwak & Radler, 2002; Ranchhod & Zhou, 2001). In addition, in health profession educational research, a study by Gill et al. (2013) had a high response rate and high quality of data using a web-based survey. The author mentioned that this high

rate of response is not achievable in the traditional way, but they were aware that their study participants regularly opened their email. They recommend that the researcher checks that not only the population have access to the internet, but also it is important to consider their ability and capability to run the designed software for the electronic survey.

By considering these literature conclusions to the context of this PhD project, it can be expected that an electronic questionnaire will produce a good response rate. This was true, as this study targeted medical students, young and educated people, as Greenlaw and Brown-Welty (2009) and Graefe et al. (2011) agree that this has a positive influence. Also, it is known that this age group of between 18 and 21 years of age have access to the internet using a smartphone, commonly using WhatsApp and email apps, as well as having regular access to them. This research used WhatsApp and email to invite students to complete the electronic questionnaire, and choose an internet-based tool (i.e., WhatsApp or email) based on the key person preference. The questionnaire was created using SurveyMonkey, which was confirmed to be compatible software with smartphones. In addition to the fact that this electronic survey was expected to fit the sample preference, the researcher, as mentioned earlier, prepared a paper form as a second choice. Therefore, the researcher applied the best practice to approach students' participation, as well as in the design of the electronic survey itself.

Therefore, the researcher considered and adopted the most suitable design for this research context. (see below link for the electronic survey).

https://www.surveymonkey.co.uk/r/FeedbackinPBL

4.2.6 Questionnaire development and field testing

Items Development

The questionnaire development was informed by the literature review and the aim and objectives of the research.

Asking students about their gender was included in the questionnaire development. The literature review informed this decision. By surveying 449 medical students in different cultural settings (US, Europe and Asia), Holen et al. (2015) found that sociocultural and personal issues affect PBL

preferences. They found that female students and those with a sociable personality had positive attitudes toward the PBL approach. Although this study (Holen et al. 2015) did not focus on the feedback process, it revealed the potential effect that gender has on the educational process. Regarding the feedback process, a significant difference exists between females and males, as the former seeks formative feedback more than the latter (Sinclair and Cleland, 2007). However, in the context of feedback in Saudi PBL schools, there is a lack of studies in this area; for example, Alhaqwi et al. (2012) targeted medical students' experience of feedback in PBL in Saudi Arabia, but they limited their sampling process to male students only. Thus, it was interesting to further investigate a potential gender difference in the feedback process in Saudi PBL medical schools.

Regarding the point of students' academic level (i.e. first, second or third year), the current PhD study also investigated this, based on the literature. Almously et al. (2014) explored advanced clinical students' perceptions of feedback received in the clinical rotation. The author examined students' self-directed learning skills by asking them to what extent they need feedback on clinical competency. The authors found most students need feedback and concluded that they (the students) are less self-directed learners. Regardless of this study's weaknesses and limitations, as explained in the literature review, the authors only involved advanced students (excluding the beginners) and made conclusions about their skills in self-direction. Investigating students at different levels of the programme may reveal a correlation between students' academic level and their feedback experience. In other words, do students experience feedback differently when they progress through PBL curriculum? Also, a study by Alhaqwi et al. (2015) found that second-year students tend to be more accepting of feedback than students in their final year. Thus, it was crucial to further investigate this.

In addition, other questionnaire items were informed by the literature, including the feedback mode and feedback source. The literature review revealed that feedback mode, written or verbal face-to-face, is a crucial factor that could influence the feedback process. In a PBL setting, Parikh et al. (2001) sought students' preferences of the modes or types of feedback in five medical schools in Ontario, Canada. As explained in the literature review, the authors found, by using a questionnaire, that face-to-face individual feedback was the first preference of all five medical schools followed by face-to-face group feedback. However, written feedback was 'never reported helpful'. In contrast, in a Saudi quantitative study (Alhaqwi, 2012), PBL students preferred written feedback to verbal feedback, and the author mentioned that 'this form [written] may be associated with less tension when compared with the verbal' (p. 1055). Therefore, these different studies revealed different preferences but were limited to quantitative enquiry; and worth further investigation.

Regarding the feedback source, PBL feedback literature revealed different experiences and perceptions regarding the point of peer feedback. Parikh et al. (2001) found that most Canadian medical students preferred peers as a source of feedback. Also, Tayem et al. (2015) used a questionnaire and found that most students reported a positive attitude to peer assessment in PBL as they felt it developed their learning and self-assessment skills (73%). Students also reported that peer assessment developed their participation in the group (71%), identifying learning needs (64%) and other positive outcomes. Moreover, Kamp et al. (2014) examined the effect of peer assessment on individual contribution within the PBL groups and their academic achievement. They found that peer assessment did not develop the individual's contribution; however, it improved their academic achievement. Furthermore, Papinczak et al. (2007) explored medical students' perceptions of peer assessment in a PBL setting in Australia. By means of qualitative action research, the students expressed mixed positive and negative experiences of peer assessment in PBL. Many students perceived that the assessment criteria were irrelevant to the learning processes in PBL groups. Therefore, implementing peer feedback could have either a potential positive effect on students' learning or a potential negative effect. This conclusion encouraged this PhD researcher to further investigate the students' perceptions of peer feedback in Saudi PBL medical schools.

Finally, the issue of feedback quality in the questionnaire document was informed by the literature review, most importantly by Hattie and Timperley's (2007) framework for effective feedback, and by Nicol and Macfarlane-Dick's (2006), who synthesised a conclusion about the best practice of feedback for self-regulation skills (see Appendix 2 for more detail).

Field testing

Subsequently, the researcher field tested the questionnaire to discuss what needs to be added, omitted, or edited in the questionnaire. As previously explained, the test was conducted in several stages: first, the researcher initially conducted a field test with an expert who read every item on the questionnaire and ensured that all items are easily understandable, also to ensure questionnaire items are reflective of the research aim and objectives. This step resulted in the first iteration.

In the second stage, the researcher conducted a focus group comprising five medical students (in their fifth year). The researcher asked the group to read the questionnaire and consider any necessary changes to improve clarity. To ensure that students understood the items, the researcher asked them to explain what each of the items meant. There was agreement between students about

what each item meant. However, there were other key suggestions from the students; therefore, the focus group was helpful in terms of discovering some shortcomings related to the questionnaire's format, wording, and items (see Table 4.1 below).

For example, the participants were confused by being asked about which type of small group learning they are engaged in because they learn through many different small groups forms (e.g. simulated learning, bed-side learning, etc). Therefore, it was decided that the questionnaire needs to focus on PBL and its variations only. Another example is that the participant who chose only the tutor as a source of feedback still answered about the peer feedback. Thus, the questionnaire was modified, and additional text was introduced to guide the participants, so that they only answer about peer if they chose the peer as a source of feedback. The revised version of questionnaire which was modified according to the field testing can be found in appendix 5.

Table. 4.1 Refinements to the questionnaire post field test

	Students' suggestions and points	Researcher's response	# of item
1	Font size is too small, which makes reading difficult.	The font size was enlarged from eight to ten points.	All
2	The students were confused by being asked about which type of small group they are engaged in because they practice many different small groups forms.	Item which asks about small group, then, omitted to be more specific about only PBL form	
3	Asking students if they learn through PBL or not is not enough. Another item is important to explore the range of how students experience PBL.	One more item was asking students if they experienced PBL in a specific way, e.g. integrated PBL.	5
4	Some schools may experience a PBL tutorial less than one time per week.	One option was added, 'less than one per week', because the current questionnaire asked students if they experience PBL once per week or more.	6

5	Students suggested that, instead of asking using ‘I prefer’, it is better to use ‘I like’.	This suggestion was considered because, by using ‘I like’, the participant will only consider this item (e.g. I like written feedback) without being affected by other options such as face-to-face feedback. However, using ‘I prefer’ might be affected by comparing one type to another (i.e. written and verbal).	10, 11
6	Student was confused between two sections concerning tutor and peer feedback.	These two sections were corrected through writing ‘tutor or peer feedback experience’ as a title for each section to help the next participant to differentiate between the two sections.	After 13 and 20
7	The researcher found that some students chose a tutor as a source of feedback and still answered the section about peer feedback.	Therefore, a text was added that guide participant to right direction, so the next participants answered the peer section only if they chose the peer as a source of feedback, same as tutor feedback.	After 13

Then, the questionnaire was translated into Arabic by the researcher, being careful to use simple Arabic words to avoid any misunderstanding. After that, two native Arabic individuals (one PhD student in medical education and one MA student in education), who are fluent English speakers and not study participants, were sent a copy of the translated questionnaire. They confirmed that the Arabic translation has been applied correctly. However, there was a doubt about the effective translation of "feedback" because there are two possible translations of that word, one is the literal translation and another one is meaning translation; the researcher chose the latter one. That decision was made because the literal translation may not make sense for all the medical students and confusion could result. The meaning translation is understood by all students, it carries the main idea of the feedback: it is “comment” on the students’ performance. That was the meaning translation.

Another pilot was conducted, this time with Saudi medical students. At the beginning, a physical visit to a dean of a medical school in Saudi Arabia was arranged to seek his approval to contact students for piloting and data collection. Once positive approval and support were granted, a link containing the electronic version of the questionnaire (Survey Monkey) was sent by WhatsApp to four medical students. They were asked to read first, then discuss with the researcher (by phone or by

chat) to check what they understood by the questions, giving feedback on the questionnaire content or on its structure (font size. etc.). This pilot led to some revisions, also confirming that the literal translation of "feedback" did not make sense, instead, other terms were suggested. In addition, as this piloting was based on an electronic version, students were able to identify a technical mistake in the last part of the questionnaire, the open items. Students were unable to write a long open answer because the box was wrongly designed to contain just a few words. Therefore, the researcher considered these suggestions as an important step, as the final version could be edited to work better for the rest of the students (research subject). See appendix 6 for the final version.

4.2.7 Best practice in quantitative data collection

An important consideration of best practice in survey data collection is how to access the sample according to Cohen et al. (2011); it is important to be achieve consent, but also it should also be practical. Cohen et al. (2011) stated that there are people who can control that access, and a researcher should be aware of that:

> *"in many cases, access is guarded by 'gatekeepers' - people who can control the researcher's access to those whom he/she really wants to target. For school staff, this might be, for example, headteacher, school governors, school secretaries, form teacher. It is critical for researcher not only to consider whether access is possible, but how access will be undertaken, to whom do they have to go to, both formally and informally, to gain access to the target group" (p. 152).*

Thus, because there were 'gatekeepers', the researcher contacted these people first. Initially, the researcher requested permission from the Dean of his medical school to contact other medical school deans involved in delivering the PBL curriculum. In addition, the researcher had a list of other key persons in these medical schools who could assist with the participation rate, such as vice dean, head of the medical education department, and academic staff members. In this stage of contacting the key persons, the researcher had to consider how to invite these people.

The researcher did not have direct access to the sample directly, so he had to consider strategies to improve the response rate. Kaplowitz et al. (2012) suggest that when inviting someone

to complete the electronic survey, it is better to insert the URL at the bottom of the invitation, so that the potential participant reads the text of the invitation before opening the URL, which is crucial for participation. A well-written invitation should provide adequate detail regarding the project to illustrate the project's seriousness and encourage the participant to respond by highlighting the positive outcomes. Furthermore, Kaplowitz et al. (2012) found that including a part of the text such as, 'the attached electronic survey takes about only 10 minutes' has a positive outcome on the response rate.

In this PhD project, the researcher practised the aforementioned strategies in the invitation preparation. As mentioned previously, the Dean of the medical school, where the PhD researcher was a lecturer, designed a letter including details about the project and its importance. In addition, the researcher contacted other key persons, also contacting student representatives to discuss key points including the importance of the project and the possible short time when completing the electronic questionnaire, by phone and voice message. A major process in the follow up in quantitative data collection is a reminder, as discussed by Hoinville and Jowell (1978), this is the most effective process to increase participation.

Cohen et al. (2011) suggested preparing a reminder letter, which is crucial to re-emphasise the importance of the study and to highlight the importance of participation. Regarding how this can be delivered, a follow up can be addressed through mail and telephone (Bailey, 1994). The researcher of this PhD project reminded key persons by email and WhatsApp explaining how participation was crucial to the success of this project. This increased the response rate as will be explained later.

Another point that the literature discusses regarding quantitative data collection is the researcher being present where the questionnaire is completed. The researcher was not present when participants completed the survey. Cohen et al. (2011) explained that being present gives the participants an opportunity to clarify any queries with the questionnaire and helps to ensure a high response rate. However, the participants may feel under pressure to participate and not have time to think carefully about the answer to each question. The questionnaire was sent to several medical schools in Saudi Arabia, in different parts of the country, and it would have been time and cost consuming to visit every single school.

4.2.8 Quantitative data collection process

The first stage in the data collection involved contacting the medical schools to access medical students for data collection. The Dean of the medical school, where the researcher is a lecturer, sent an invitation letter to twenty medical school deans, which included a link to the e-questionnaire encouraging them to share the link with their students. In addition to the link, the ethical approval reference number (see the ethical approval in appendix 9) from the Medical School at the University of Sheffield was also attached, as well as the researcher's and supervisor's details to enable Deans to contact the research team should they like to know more about the project.

Initially, seven medical schools responded to the Dean's letter, including the Dean's school itself (the researcher's school), with two medical schools responding to the researcher's direct contact with a key person (Head of Medical Education and Vice Dean for academic affairs). Finally, nine medical schools in total responded.

In the beginning, the response rate was very low: two of these seven schools gave only one response. Regarding the researcher's school, the electronic questionnaire was sent to the students' representatives, two selected representatives for each academic year, as they can contact their peers via WhatsApp. They had been asked by the course director to send it to their peers and encourage them to respond. Unfortunately, only a few students responded (around 10%) due to a busy month of final exams, but this increased to 20% when the examinations ended. This issue of a low response rate was similar in the other schools. Consequently, the researcher had to think about following-up with a reminder.

Regarding medical school [1], the researcher directly contacted the representatives by phone and requested their support. The key persons from another four medical schools [2,4,5 and 6] were contacted and reminded through WhatsApp to encourage their students to participate through the attached electronic questionnaire link. Regarding medical school [3], the director of the PBL curriculum was contacted by email and reminded about students participating in this project. He advised the researcher to send a paper-based questionnaire instead of the electronic one to help increase the response rate. Thus, the researcher sent him a PDF copy of the questionnaire, the completed paper questionnaires were then scanned and sent back to the researcher by email.

The remaining three medical schools were excluded from this study as students from one of these schools responded that there was no PBL applied there, the other two medical schools had only one responder and there was no key person identified whom the researcher could contact to discuss

the low response rate. The reminders increased the response rate to 33% of students who learn through PBL in six medical schools.

4.2.9 Data analysis

After completion of the questionnaires and collection of the data, the researcher had to process the data. Moser and Kalton (1977) confirmed the importance of stages of data processing. Concerning completeness, the researcher should ensure that the questionnaires are fully completed. Moreover, the researcher should check that items are answered accurately e.g. possibility of writing an unclear answer or duplicate while answering the items. In this PhD project, most questionnaires were received electronically by SurveyMonkey, so inaccuracy was not applicable, unlike in the paper-based questionnaires. Completeness was checked in both questionnaires, and for missed items, the researcher placed a code 99 as suggested by the supervisory team. Also, codes were assigned for each answer, e.g. 1 for males and 2 for females in the item of gender; when variables needed to be analysed by meaningful categories and were nominal or ordinal level variables.

Statistical analysis tests

Regarding statistical analysis, the researcher was guided by the literature and the supervisory team about the best practice in data analysis. The first step was to decide which test was appropriate. According to Cohen et al. (2011), answering that question depends on what a researcher aims to test, e.g. to examine correlation or explore differences between groups. Another point that a researcher should consider is 'what is the scale of the variable that he/she has', i.e. ordinal variables or nominal variables (Cohen et al., 2011).

The researcher firstly aimed to explore frequencies, for example, how many males and females responded or how many students prefer verbal vs written form of feedback. For this purpose, the researcher applied a frequency crosstable test using SPSS.

Regarding testing a correlation between two ordinal items, e.g. the correlation between students' stage of study and how much they receive feedback, the researcher chose Spearman test. The reason for choosing that test is the data type (i.e. ordinal variables) as confirmed by Cohen et al. (2007, p.528):

> "the two most commonly used correlations are the Spearman rank order correlation for ordinal data and the Pearson product-moment correlation for interval and ratio data."

Mann Whitney was used to test for differences between two-items nominal variables, e.g. the difference between male and female in receiving a specific purpose of feedback, such as how to do better. Again, that decision was based on the data type: nominal data. Finally, Kruskal Wallis was used for a similar purpose to the Mann Whitney but for three or more nominal variables items like the source of feedback: tutor, peer, or both.

SPSS was used to analyse the quantitative data. The researcher was advised by a statistician and PhD supervisor; and also guided by literature (Cohen et al. 2011). All data was therefore managed and analysed by SPSS software.

Regarding qualitative open items, they were analysed through thematic coding. Once analysed, the aim of this stage was completed, which was crucial for the preparation of the next part of the project, the qualitative stage.

4.3 Students' focus groups and tutors' interviews

4.3.1. Introduction

The researcher chose to conduct semi-structured interviews because they are suitable to the research circumstance. Kvale (1996) defined an interview as an exchange of views which happens between two or more people on an interesting topic when the production of knowledge can be achieved by human interaction. An interview aims to understand the subjects' interpretation of the world in which they live (Brinkmann and Kvale, 2015).

By interview, interviewees can explain the world that they live in through their experiences, and they can describe the specific studied issue depending on their point of view (Cohen et al. 2007). Also, by interview, the interviewer can develop a hypothesis through collecting data rather than merely collecting facts and information; the interviewer should be skilled in creating a situation that allows interviewees to talk freely and honestly about their experience, as suggested by Oppenheim (1992).

Brinkmann and Kvale (2015) argue that the data collection method must map to the research aim. They argue that choice of method needs to be underpinned by a strong appropriate rationale; as in some cases interviewing is used because it is more favoured than quantitative statistical methods. They argue that a qualitative interview should, logically, be used when this method is the best choice for a specific research problem. In this research, only using a questionnaire was not enough to achieve a comprehensive understanding about the settings, so interviews were added because this route of data collection can support the limitations of such questionnaires as was justified earlier. As agreed by Silverman (2010; 2006), the research topic was kept in mind when the data collection method was chosen; so, when the experience of the participants was to be interpreted, interviews seemed most appropriate.

Individual semi-structured interviews have advantages when compared to focus groups. This is because interviews allow the researchers to ask questions and extract viewpoints from participants in detail, whereas this would not be possible in a focus group due to its public nature or social desirability bias (Rubin and Rubin 2005). Therefore, it was possible that some of the participants may have become hesitant to share their specific situations, such as students' positive or negative emotion regarding peers in PBL tutorials. Cohen et al. (2007) mention that a positive aspect of semi-structured interviews compared to structured interviews is that the researcher can control the response direction to discuss in depth an interesting issue mentioned by the interviewee. For example, if students or tutors mention an interesting issue such as barriers to implement peer feedback, the researcher could ask for more details. Semi-structured interviews were selected in this qualitative stage as by means of probing sub-questions, it would be possible to attain a deep analysis of the issue from the participant perspective (DiCicco-Bloom and Crabtree 2006).

On the other hand, focus groups may be more beneficial than single interviews. According to Watts and Ebbutt (1987), focus group discussions can offer different responses from people who share similar experiences and situations instead of providing a single discussion. Arksey and Knight (1999) added that some different responses can complement others; consequently, a group discussion can be considered more reliable and comprehensive than an individual interview. The most crucial advantage is that conducting a focus group saves time because different opinions are collected at the same time; therefore, it is more feasible than interviews in cases of limited time. Furthermore, focus groups allow simultaneous consideration and reflection on contrasting viewpoints.

Both individual interviews and focus group discussions were beneficial to this research. Therefore, focus groups had been chosen for student data collection as appropriate as they allow the

exploration of multiple views at the same times and suitable for data collection that occurred within a limited time period of three months. Regarding tutors, semi-structured interviews had been chosen since there were a fewer sample needed compared to the students. Individual interviews, also, offered much privacy for tutors to express their own perceptions.

4.3.2. Aims and objectives

As mentioned previously, qualitative research is based on the quantitative data analysis in mixed method research (Watkins & Gioia, 2015). Creswell (2014) pointed out that the advantages of explanatory sequential mixed methods research not only shape the sample for the qualitative stage of the research, but also assists the researcher to determine what interview questions should be asked and answered. In this project, this was applied in forming the research question, setting, and sampling criteria. Research questions were designed to understand how students perceive the feedback, also exploring why there is such preference for a specific mode or source of feedback, and why there are such statistical results about their experience in receiving feedback.

The main aim of the qualitative questions was to explore such reasons, experiences, and perceptions behind the numerical questionnaire results. For example, 30% of students reported that they never or rarely received feedback on how to do better.

Tutors' interviews helped to further triangulate students' perceptions and experience in order to confirm that both stakeholders have similar and different perceptions and experience of the feedback process.

4.3.3. Settings and sample

Regarding the setting, this researcher found that there were four medical schools with varying statistical results; hence, these were included in the qualitative stage to further explain why there were such differences. In the sampling process, the researcher included criteria to ensure that the qualitative student focus groups were about 50:50 with respect to gender, as there was a gender balance in the quantitative data (i.e., 50% of each gender). This ratio between the two genders was important for various reasons. First, it was important to reflect the equal ratio between the genders

resulting from the quantitative analysis, and this gender participation ratio in the qualitative stage also would further help investigate the different perceptions of each gender. As previously explained, gender is a potential factor in the feedback process as informed by existing literature. Also, sample tutor interviews were based on student gender distribution, i.e. 50% of each gender was selected when interviewing tutors.

Also, it was suggested by the supervisory team initially to conduct twelve focus groups with students and twelve interviews with tutors in a limited period (three months). The researcher and his supervisory team considered saturation in choosing the number of interviews, so this number of interviews was thought to be adequate to reach saturation. If not, a plan to conduct further interviews was considered. Around one hour for each student focus group and 30-40 min for tutor semi-structured interviews was planned. Regarding the time allocated for the data collection period, it was decided by the Saudi Arabian Cultural Bureau in London who funded this project (three months).

4.3.4. The focus groups and interviews pilot

While the researcher was contacting the schools for permission, he piloted the focus groups and interviews. Watkins and Gioia (2015) pointed out that it is a good step in research to test the planned process for the data collection on a small scale before it begins. The test and piloting give opportunities to detect possible shortcomings at an early stage.

The researcher travelled to the research setting, Saudi Arabia, to initially pilot the written questions and check their validity. For that purpose, the researcher initially conducted one interview with only one student, followed by conducting a focus group with five students. The pilot confirmed that these questions were valid, but their order needed to be changed. Thus, the researcher reflected on the pilot findings and developed the qualitative questions further (see appendix. 7 for the final version of the focus groups questions). A pilot semi-structured interview was conducted with a male tutor, who was experienced in facilitating PBL tutorials. This process gave the researcher the confidence that the interview questions are appropriate and easily understood by potential participants (see appendix. 8 for the final version of the focus groups questions).

4.3.5. Best practice in the qualitative data collection

After choosing the settings and sampling, the researcher prepared an interview guide, including the research questions, based on literature recommendations. The guide was not limited to the research questions, but also guided the researcher for skills, strategies, and processes that he should apply while collecting qualitative data. The moderator has an important role in the focus group discussion; argued to be central by Vaughn et al. (1996), a key part involves creating a good environment for collecting quality data.

A number of considerations are important when preparing for research interviews (Kvale, 1996; Cohen et al. 2011). The first consideration is to build a safe environment for participators to talk freely and securely. In this PhD project, the researcher emphasised to the participants, either students or tutors, that the topic is about their experiences of the feedback process and there is no right or wrong answer. Vaughn et al. (1996) has written a comprehensive guide with recommendations about the most important issues which were considered by the focus group moderator in this research. Some examples of these key recommendations are given below:

1. A moderator should fully understand the research objectives.
2. A good moderator should manage the time effectively and ensure that only relevant discussion that research aims is nurtured.
3. During the introduction, the moderator should build rapport and minimise any status or power issues; e.g., not using titles, such as 'doctor'.
4. It is important to create a safe and comfortable atmosphere and increases the honesty from the participants during the interviews.
5. The group dynamics should be improved by positive feedback where appropriate.
6. The moderator should facilitate discussions so that uninvolved or shy participants are encouraged to contribute through prompts and appropriate body language; (such as eye contact).

Non-verbal communication is important and can be practised through body language showing the participant that the researcher is actively listening. Moreover, group dynamics is an important focus in an active group discussion, which is developed by encouraging all participants to engage and talk. The researcher applied these considerations during the interviews.

Another consideration is how language is appropriately applied. The researcher chose Arabic as the language of discussion while collecting the data, as the medical students and some of the tutors were Arabic natives; Arabic would be easier for all, to maximise in-depth answers and more interactive

discussions. Furthermore, based on students' responses to the questionnaire, many students answered the open items using Arabic. Therefore, it can be concluded that students preferred to apply the Arabic language when they want to express complex views.

Furthermore, while the researcher was piloting the focus group, one student who attended said: "if they knew that our discussion is in Arabic, they would attend." The reason behind that attitude is it seems that students are not comfortable to speak in-depth in a secondary language. Moreover, another student confirmed that perception during data collection, as a female student mentioned that using English in the feedback process is a barrier for deep dialogue with a tutor (described in detail in the results chapter). Thus, it was confirmed decision regarding using the Arabic language.

In addition to the effect of language, the questions should be clear and understandable by avoiding academic jargon (Patton, 1980); the researcher ensured that participants had the opportunity to ask for clarification. The researcher also ensured that he periodically summarise and repeat the conclusions to be confident of a true understanding of the focus group discussions. Furthermore, to have an easy and fluent discussion Patton (1980) suggested to start with the easiest open question. That could make the discussion start easier which positively influences students' engagement. In this project, the researcher started a discussion by asking, "what does feedback mean for you?"

What is equally as important as the process of qualitative data collection is to prepare for access and permission to collect the data (Bell, 1991). In a similar way to the process during the quantitative data collection, the researcher considered the critical role of the availability of a key contact person in each school. However, at this stage, the role of the key person is important because the medical schools would be physically visited by the researcher at allocated times for student focus groups and tutor interviews. Cohen et al. (2011) suggests that researchers to prepare before the contact is made by stating the research aims, design and methods. As these schools had already participated in the quantitative stage, there was no need to restate the aim and objectives. However, the key people were informed about the methods, including details about the sample, confirming that their engagement in the qualitative stage of the study is critical to further understanding the survey results as suggested by Bell (1991).

An important part of that confirmation is to ensure research ethics approval before commencing data collection. Bell (1991) recommends researchers to provide anonymity for all participants and assuring confidentiality. During the data collection, the researcher asked the participants for their consent before the interview and informed them about the project through the

study information sheet along with opportunities for questions or clarification before commencing the interviews.

Furthermore, while data was collected, incentives to support participation (Watkins & Gioia, 2015) can be considered. The researcher in this project supported and encouraged participation, especially with students, by ensuring them that the discussion would be informal with snacks like sweets and coffee, which helped to create a friendly environment to encourage student engagement.

Another consideration in the data collection process is the recording. The researcher decided to record all focus groups and interviews, as recommended by Seale et al. (2004), who pointed that recording the interviews and discussions in academic research is a vital step that help the research to revisit the interview data (through a transcript). The step of recording supports the later process of data analysis (Silverman, 2011).

Factors affecting focus groups

According to Carey (1995), some participant might be unwilling to share personal feelings in a group situation. Kitzinger (1994) and Morgan (1995) suggest that including participants who have similar ideas and background (e.g., gender, age or ethnicity) has a beneficial effect on facilitation of group dynamic.

A background effect in this research settings was gender. In Saudi Arabia (the research settings), students of different genders are separated, during learning. Therefore, an environment that replicates this was used for the focus groups.

These considerations apply to the moderator also (Morgan, 1995). As agreed by Smithson (2000) interviewing the opposite sex may cause an uncomfortable environment in some situations. Thus, the researcher considered this point. Consent forms were sent to the female students and which asked if it was convenient to be interviewed by a male moderator.

Although having a moderator with same gender of the participants is an important consideration, that is not the only consideration for conducting effective focus group discussions (Riessman, 1987; Smithson, 2000). Smithson (2000) suggests that it is preferable to have one moderator conduct all the focus groups to reduce variability. Thus, the researcher moderated all the focus groups. All female groups agreed except one group who were then interviewed using a voice conversation in two separate rooms (i.e. the researcher was in a room and the female students were in another room). This will be further explained in the next section.

4.3.6. The process of qualitative data collection

An invitation letter was sent to the four medical schools through a key person at each school. The invitation was sent by both email and WhatsApp, and agreement was received to conduct qualitative research in their school and at a scheduled time. Then, the information sheets together with the consent forms were sent to them to be distributed to potential participants. The process of recruiting the focus groups and interviews in every medical school is presented in the Table 4.2 below.

Table. 4.2 Qualitative data collection process

School	Students focus groups	Tutor interviews	Process	Note
First	**Three male** groups (n*= 7,8,6) + **Two female** groups (n= 8,7)	**Two male** tutor interviews + **Two female** tutor interviews	Students' representatives in these two schools had an important role in encouraging their peers to participate. Similar to other schools, the students were busy, so the group discussions had to be arranged to spend at least 40 min in each group discussion.	These two medical schools are government, so only Saudi nationality students participated.
Second	**One female** group (n= 8)	**One female** tutor interview		
Third	**Two female** groups (n= 8,8)	**Two male** tutor interviews +	The researcher met the key person (PBL director) face-to-face and discussed how the researcher could proceed with interviewing students and tutors. The director sent an invitation to all students,	A special feature of these two medical schools is that they are private, non-

		One female tutor interview	male and female, inviting them to participate in that project. Initially, just two female students agreed to participate, but reminders increased participation to two groups of females (eight in each). Unfortunately, males declined to participate. The director of the PBL tutorial sessions invited tutors who facilitate PBL tutorials to participate in tutor interviews: two males, who facilitate both male and female PBL groups, and one female.	government schools, thus, have different Arabic nationalities instead of just Saudi in government schools. This was an advantage, allowing the researcher to explore if there are differences in perceptions between Saudi and other Arabic nationalities, in their experience of PBL.
Fourth	**Three male** groups (n= 8,8,8) + **One female** group (n= 7)	**Two male** tutor interviews + **One female** tutor interview	A key person (head of the medical education department) arranged for four male focus group discussion to be conducted. Students were busy having sessions. Therefore, the researcher had to conduct the focus groups at the end of the day after the students left the school. The researcher visited their accommodation (student accommodation where they live together) to conduct the focus groups. The one female focus group was conducted in the school with a physical barrier and no face-to-face contact. Thus, the discussion was an audio by a conversation. For the tutor interviews, two semi-structured interviews with the two males were conducted in the medical school and the female tutor was interviewed by phone using an App called "Cube ACR" because the researcher was not able to attend the scheduled time for that interview.	

Total	**Six male** focus groups + **Six female** focus groups	**Six male** tutor interviews + **Five female** tutor interviews		The range of focus group durations is 53 minutes for males and 40 minutes for females.
n*: group size.				

Within these focus groups and interviews, an interview guide was used. The sessions began by greeting the students and stating appreciation of their participation. The researcher introduced himself and explained why he was conducting the research, ensuring that the students and tutors had read the information sheets and provided written informed consent. The researcher reminded students about the potential importance of the project to medical education practice. Participants were asked for agreement to be recorded, and informed that the recording would kept be in a safe place, only shared with the supervisory team or a trusted independent transcriber. This information was also presented in the study information sheet.

Ground rules were important elements; participants were told that only one student could speak at a time to avoid disorganised discussion, which would also be difficult to transcribe later; every participant was encouraged to talk, but time made for others to speak, so all participants have the opportunity for contribution. The researcher requested that participants respect any conflicting opinions. Ambiguity was avoided by encouraging students to ask for clarification about any unclear questions. To aid such an interactive discussion within a small group, students wrote their names on a paper in front of them, so the researcher could mention their name, which was important for transcribing and analysis later on. Informality was considered important, so there was no evaluation, and no wrong or right answer. Importantly, the researcher tried to break the ice by welcoming participants and providing coffee and tea.

With regarding to language used in collecting data, both Arabic and English were used; the latter for the non-Arabic tutor, and the former for all students' focus groups and native Arabic tutors, unless they preferred English. There were eleven semi-structured tutor interviews conducted, six in

English and five in Arabic. Therefore, in summary, the researcher conducted eleven interviews with tutors (six males, five females) and twelve focus groups with students (six males, six females). Dividing gender equally in the student focus group discussions was based on the gender frequency in the quantitative data analysis, as almost 50% of each gender participated in that stage. The tutors' gender was based on the student gender ratio. In most medical schools, the female tutor facilitates female student tutorial groups, and male tutors facilitated male groups, except the 3rd school, where each male tutor facilitated both genders in tutorial PBL groups.

4.3.7 Data analysis

The focus groups and semi-structured interviews were conducted until saturation was reached; i.e. no new theme emerged. The researcher began to initially analyse the data to identify potential themes (by re-listening to the audio recorded interviews and focus groups), then discussing these initial themes with his supervisor via a video call. He proceeded with the analysis and began transcribing the audios.

Seale et al. (2004) asserted that data transcriptions are critical for the analysis. Silverman (2011) adds that transcription is important, not just for representation of the data, but it is a part of the analysis process. He argues that it has particular importance in *"classifying the position or location of action in order to examine the ways in which action is sensitive to the preceding and concurrent contributions of others"*. Thus, this PhD project the approaches of recording and transcribing the data.

The researcher transcribed the audio recordings of the interviews and focus groups using software called "Express Scribe" which enables the upload of the audio file, run the audio, and type while the audio is running. To improve transcribing quality, he repeatedly listened to what had been transcribed and checked the accuracy of that transcription. Although the software was helpful, the researcher could not manage all data transcribed independently in a limited and specified time (two months), hence, external help assistance was engaged through an independent transcriber. The researcher transcribed 75% of the data and had assistance with the remaining 25%. The external transcriptions were checked by the researcher for accuracy.

The researcher considered literature to guide the thematic analysis (Tesch, 1990; Pope et al. 2000; Rubin and Rubin 2005; and Silverman, 2011). The recommended best practice is to start by becoming familiar with the data, followed by generating the initial codes, then collating similar codes to create themes, followed by reviewing the themes to check that they reflect the data. The final step is to refine these themes by further linking them and looking for associations (Tesch, 1990).

Importantly, the researcher used MAXQDA software for the qualitative data analysis, which allowed easy and rapid organisation and analysis of the data. NVIVO and MAXQDA both were mentioned by Gibbs (2007) as having beneficial features, such as the ability to import any document, make a hierarchy of codes and nodes by coding text, work on the original document, and the ability to make comments and memos on the data files. These processes made the software a good choice to manage the data. Although NVIVO is offered for the students freely, the researcher purchased MAXQDA because the former does not support and read Arabic documents.

MAXQDA was used to upload and thematically analyse the student data first by assigning codes for each part of the transcript, then grouping similar codes under a theme that represented these codes. Initial codes were for example, " effect of relationship" and "receiving feedback within the group and in front of peers". These codes were grouped under a theme of "factor influencing peer feedback." To support the quality of analysis, codes were revised and refined. Finally, the generated themes were presented to the supervisory team as a handwritten mind map (tree). These conversations were used to further refine and regroup the themes. The themes and sub-themes were posted on the wall to help visualise and see connections. This also helped to refine toward the best fit of themes and sub-themes.

"NovaMind" an electronic mind mapping software was used to present the themes in a complex way, helping to identify connections between different sub-themes, which had some similarities or be influenced by each other, and clarifying connections by drawing a line between them. For example, under the theme of "factors influencing feedback quality," there are two different sub-themes: "relationship" between the feedback giver and receiver and "atmosphere." In this example, the relationship could be causal; because if there is a good relationship, that will create a friendly atmosphere (learning environment) for accepting others' comments. Therefore, this ability of connecting sub-themes was an advantage of that software compared to the others which only offer sub-theming without being able to show interconnectivity and presenting any complexity.

After both posting and electronically mind-mapping, the researcher presented the most recent developed analysis to the supervisory team for discussion. Further development was undertaken because there were, again, some sub-themes needing to be re-named and re-organised. For example, the researcher generated themes named "students' definition of feedback" and "receiving feedback" as the latter reflects if students receive feedback or not, in other words, to what extent they receive feedback in PBL. In this example, discussions with the supervisory team led to renaming the themes as "students' expectation" and "reality." As the transcriptions and discussions

about the data suggested this renaming better reflected the meaning. The key themes and sub-themes are reported in the next chapters; six (focus groups analysis) and seven (interview analysis).

Chapter 5: Results – Survey Study

5.1 Introduction

This chapter reports the quantitative findings derived from the questionnaires distributed to medical students on their perception about feedback in Saudi PBL school. In total, 856 medical students (33% of the whole study population) from six Saudi medical schools completed electronic and paper-based surveys. The questionnaire comprised 27 closed and open-ended items, aiming to determine how medical students in Saudi Arabia experience the PBL feedback process. The questions focused explicitly on: the modes (verbal vs. written); sources (tutor vs. peer); and different purposes that students receive. Various statistical analyses were applied to explore differences and correlations between variables. A simple frequency cross table was used to test the frequency of each variable in the descriptive analysis, while Mann-Whitney and Kruskal-Wallis were applied to examine differences between nominal variables. The correlation of ordinal variables was tested using Spearman rho correlation.

5.2 Descriptive analysis

5.2.1 Demographic data

The first set of items explored students' demographic data, including their school, gender and academic level (i.e., second or third year). Table 5.1 presents the summary statistics.

Missing responses are as a result of items not relevant being skipped, based on participants' answers to previous items. For example, some students answered that they received feedback only from a tutor, so the peer feedback section would be automatically skipped. Furthermore, some students did not complete the whole questionnaire.

Table 5.1 Demographic data

School						
School	1st	2nd	3rd	4th	5th	6th
Frequency	212	45	338	68	142	51
Percentage	24.8%	5.3%	39.5%	7.9%	16.6%	6.0%
Gender						
Gender	Male			Female		
Frequency	428			427		
Percentage	50.1%			49.9%		
Level						
Level	1st year	2nd year	3rd year	4th year	5th year	6th year
Frequency	111	336	282	57	19	18
Percentage	13.0%	42.9%	33.1%	6.7%	2.2%	2.1%

Table 5.1 shows that the six medical schools have a varied participation rate, with the lowest rate (5.3%) at the second medical school and the highest rate (39.5%) at the third medical school. Most of the study participants (64.3%) are from the first and third medical schools. The gender distribution of the participants was similar. Regarding academic level, most participants (89%) ranged from the first to the third level.

5.2.2 PBL tutorials and feedback

The next part of the questionnaire asked students about the characteristics of PBL tutorials. First, the students were asked how many PBL tutorials they attended per week, and a high proportion (86.2%) indicated that they attended two per week, as presented in Table 5.2. Regarding the tutorial group size, 76% of students reported a group size of nine to eleven members, and 17.9% reported groups larger than eleven. Only a small proportion of participants (6.2%) reported a group size of lower than nine members. Regarding the PBL tutorial duration, a high percentage of students (74.8%) indicated that they spent two hours in each session.

Table 5.2 PBL tutorials and feedback

PBL tutorial frequency per week				
PBL tutorial frequency	Less than one	1-2	3-4	More than 4
Frequency	25	727	51	40
Percentage	3.0%	86.2%	6.0%	4.7%
Number of students in the group (group size)				
Group size	3-5	6-8	9-11	Greater than 11
Frequency	3	48	633	149
Percentage	0.4%	5.8%	76.0%	17.9%

PBL tutorial duration					
PBL tutorial duration	Less than one hour	1 hour	2 hours	3 hours	More than 3 hours
Frequency	3	117	619	48	41
Percentage	0.4%	14.1%	74.8%	5.8%	5.0%
Receiving feedback in PBL					
Receiving feedback in PBL	Never	Rare	Sometimes	Often	Always
Frequency	31	97	290	260	142
Percentage	3.8%	11.8%	35.4%	31.7%	17.3%

Next, students were asked how much feedback they received. They had five ordinal choices, ranging from "never" to "always." Table 5.2 presents students' responses to this item. Only 3.8% of the participants indicated that they never receive feedback.

The participants' reports in the section about PBL tutorials and feedback revealed that PBL tutorials are commonly held two times a week, with a group size that ranges between nine and eleven, for a duration of two hours, and that feedback is given to students.

5.2.3 Feedback mode and source

As stated in the aims of this research, it was essential to explore students' experience of receiving feedback, either verbal or written, and which method they preferred. Participants' responses are presented in Table 5.3, with most students reporting that they received feedback either as "verbal only" (63.1%) or in "both" modes (32.3%). Only 2.5% received feedback in "written mode only". Table 5.3 also shows how students' preference for each mode, indicating (as highlighted) that students prefer verbal feedback over the written, at 86.5% versus 70.6%, respectively. Verbal feedback is the most common mode of feedback, with a total of 95.4% of participants receiving this form. Further qualitative investigation was needed to explore the potential reasons for and factors behind students' preference.

Participants were also asked who provided the feedback and which feedback source they preferred. Table 5.3 shows that most participants received feedback from both tutors and peers (70.2%), and only 28.5% reported receiving "tutor feedback only". As shown in Table 5.3, more than half of the students preferred to receive feedback from both sources (58.5%), but more than a third (38.6%) preferred to receive it from tutors only. These findings indicate the need for further qualitative investigation to understand the reasons for these variations.

Table 5.3 Mode and source of feedback

How do you receive feedback (mode)					
Mode	Face-to-face (verbal)		Written	Both	Others
Frequency	510		20	261	17
Percentage	63.1%		2.5%	32.3%	2.1%
I like face-to-face (verbal)					
Preference level	Not at all				Very much
Frequency	49	57	163	187	332
Percentage	6.2%	7.2%	20.7%	23.7%	42.1%
I like written feedback					
Preference level	Not at all				Very much
Frequency	110	121	216	147	190
Percentage	14.0%	15.4%	27.6%	18.8%	24.2%
Who gives you the feedback (source)?					
Source	Tutor		Peer	Both	
Frequency	224		10	551	
Percentage	28.5%		1.3%	70.2%	
Which Source do you prefer?					
Preference	Tutor		Peer	Both	
Frequency	304		23	461	
Percentage	38.6%		2.9%	58.5%	

5.2.4 Feedback quality

The last two closed-item parts of this survey asked more detailed questions about participants' experience of receiving feedback from the two sources: tutor and peers. These items examined to what extent students received feedback for different purposes including: to explain what was good about a student's performance, what a student needs to do better or both. In Table 5.4, the tutor and peer feedback quality are presented according to the different purposes of feedback, as descriptive data. Furthermore, Table 5.5 shows the results of the Friedman test, which reveals different types of feedback and whether some are significantly more common than others.

It can be seen in Table 5.5, there is a statistically significant difference between the different purposes of tutors' feedback, x^2 (6) = 539.802, p= 0.000. This is also found in peer feedback, x^2 (6) = 321.905, p= 0.000. These differences have an effect of medium size, based on Kendall's W value (a value of 0.1 < 0.2 is medium).

Regarding tutor feedback, Tables 5.4 and 5.5 show that feedback with the first two questions, that help me with what I am doing well and what I can do better, was given most often to students. Only a minority of students reported that they were never or rarely told by tutors what they were doing well (16%) or what needed to be done better (18.5%). On the other hand, more than a quarter

of the participants reported they were never or rarely told how to do better (28.8%), and a third of them were never or rarely told why their performance was good or bad (34%).

Regarding peer feedback, Table 5.4 shows that peers are less likely to say what needs to be done better than what is being done well, at 25.9% (never or rarely) and 16.4%, respectively. Furthermore, 40% of participants reported that they were never or rarely told why they needed to do better by their peers.

In addition, Tables 5.4 and 5.5 show, interestingly, that feedback with a negative personal aspect is less likely to be given by both tutors and peers. As presented in Table 5.4, 47.3% of participants were never or rarely given negative feedback by tutors and 44.1% were never or rarely given it by peers.

Table 5.4 Feedback quality in PBL

	Tutor feedback		**Peer feedback**	
I receive feedback that tells me **what** I am doing **well**				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	121	631	85	434
Percentage	16.1%	83.9%	16.4%	83.6%
I receive feedback that tells me **what** I can do **better**				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	139	611	134	384
Percentage	18.5%	81.5%	25.9%	74.1%
I receive feedback that tells me **how** to do better				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	216	534	174	345
Percentage	28.8%	71.2%	33.5%	66.5%
I receive feedback that tells me **why** what I did was good or bad				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	255	495	149	369
Percentage	34.0%	66.0%	28.8%	71.2%
I receive feedback that tells me **why** I need to do better				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	254	498	210	307
Percentage	33.8%	66.2%	40.6%	59.4%
I receive feedback that involves a **positive personal** aspect				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	233	515	119	399
Percentage	31.1%	68.9%	23.0%	77.0%
I receive feedback that involves a **negative personal** aspect				
How much	Never/Rare	Sometimes/Often/Always	Never/Rare	Sometimes/Often/Always
Frequency	354	394	229	290
Percentage	47.3%	52.7%	44.1%	55.9%

Table 5.5 Differences between different feedback purposes

Tutor feedback in PBL						
Feedback	Mean rank (never receive =1, always = 5)	N	Test statistic value (chi-Square)	df	p-value	W (effect size)
What 1	4.76	741	539.802	6	0.00	.12
What 2	4.79					
How	3.98					
Why 1	3.78					
Why 2	3.76					
Positive	3.87					
Negative	3.07					
Peer feedback in PBL						
Feedback	Mean rank (never receive =1, always = 5)	N	Test statistic value (chi-Square)	df	p-value	W (effect size)
What 1	4.79	513	321.905	6	0.00	.10
What 2	4.23					
How	3.85					
Why 1	4.00					
Why 2	3.51					
Positive	4.37					
Negative	3.25					

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

Students' descriptive data were varied throughout this survey, and some interesting responses required further qualitative investigation. For instance, more students preferred verbal feedback than written feedback, and more than one-third of participants (38.6%) did not like to receive peer feedback. It was noted that the first two purposes of giving feedback, what is right in a student's performance and what needs to be improved, are most frequently given. Feedback for other purposes, such as how to improve performance and why a performance was good or bad did not occur frequently. Further qualitative study was required to explore these issues and perceptions.

The next sections report differences found between nominal and ordinal variables.

5.3 Differences between nominal variables

This study involved two types of nominal variables: two-item variables, such as gender, and variables with more than two items, such as how feedback was given (i.e. face-to-face, written, or both). The Mann-Whitney test was used for the former and the Kruskal-Wallis test for the latter. The

following sections describe the nominal variables that were analysed, including school, gender and feedback mode.

5.3.1 Differences between the medical schools

The Kruskal-Wallis test revealed that students from different schools reported different and varied experiences of the feedback process, as shown in Table 5.6.

There were statistically significant differences in feedback quality between the different medical schools. Generally speaking, the first and fourth medical schools had the fewest shortcomings in term of feedback quality. For example, there is a statistically significant difference between the medical schools in the amount of tutor feedback received about what needs to be improved (Kruskal Wallis H[5] = 111.77, and p = .000). There were only 4.0% (in the first school) and 3.6% (in the fourth school) of participants reported deficiency in receiving feedback that tells student what need to be improved. On the other hand, students at the other schools reported higher percentages, reaching 35.3% at the second school.

The effect size of differences in receiving feedback for the first two purposes between the medical schools is the largest, at d = .8; as "d" refers to Cohen's (1988) suggestion to interpret the effect size of a non-parametric test. According to Cohen, there is no effect if d is less than 0.1, a small effect if d is 0.2 – 0.4, an intermediate effect if d is 0.5–0.7 and a large effect if d is greater than 0.8. Therefore, the difference in receiving the first two types of feedback among the medical schools has a large effect.

As shown in Table 5.6, all the schools face a similar problem: that feedback with the first two purposes, what I am doing well and what I can do better, is given more frequently than the others. For example, at each school, students are told how to do better less often than they receive feedback with the first two feedback purposes (what I am doing well and what I can do better), as shown in Table 5.5.

Table 5.6 Differences between the medical schools

Feedback	First school	Second school	Third school	Fourth school	Fifth school	Sixth school	Kruskal Wallis	Degree of freedom (df)	p-value	Cohens d
	% rare and never to receive the feedback									
Tutor feedback in PBL										
What 1	2.8%	11.8%	24.3%	8.9%	20.2%	11.4%	104.09	5	.000	.8
What 2	4.0%	35.3%	23.2%	3.6%	28.2%	22.7%	111.77	5	.000	.8
How	24.3%	38.2%	29.0%	10.7%	35.8%	41.9%	18.88	5	.002	.3
Why 1	23.3%	25.9%	37.7%	17.9%	39.5%	40.9%	39.97	5	.000	.4
Why 2	26.0%	47.1%	33.8%	23.2%	40.3%	50.0%	19.14	5	.002	.3
Positive	20.0%	38.2%	34.3%	23.2%	40.3%	31.8%	25.91	5	.000	.3
Negative	27.3%	61.8%	55.7%	25.0%	57.3%	56.8%	74.25	5	.000	.6
Peer feedback in PBL										
What 1	3.7%	5.0%	31.7%	10.0%	13.7%	5.7%	81.62	5	.000	.8
What 2	10.5%	35.0%	32.8%	10.0%	39.7%	37.1%	67.81	5	.000	.8
How	32.7%	50.0%	31.7%	16.7%	35.6%	48.6%	14.84	5	.011	.3
Why 1	22.8%	30.0%	37.4%	20.0%	20.6%	31.4%	15.43	5	.009	.3
Why 2	37.3%	60.0%	36.4%	20.0%	49.3%	68.6%	22.58	5	.000	.4
Positive	14.2%	30.0%	28.1%	20.0%	27.8%	22.9%	15.43	5	.002	.3
Negative	32.7%	57.0%	46.2%	26.7%	50.7%	68.6%	42.85	5	.000	.6

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

5.3.2 Differences between genders

The Mann-Whitney test revealed that male and female students reported different and varied experiences of the feedback process, as shown in Table 5.7.

The most interesting aspect of this table is that females reported a more dissatisfied experience of tutor feedback than males did. For example, there is a statistically significant difference between the genders (W = 60,559, p = .001) in receiving feedback about why a performance was good or bad, with 39.8% of females reporting they never or rarely received feedback compared to 28.2% of males. All differences found between the genders, whether statistically significant or not, have a large effect size (d = 3.4).

Regarding peer feedback experience, only two significant differences were found between the two genders, as presented in Table 5.7.

Another interesting aspect of the data in this table is that, for both sources of feedback, females were given feedback with a negative personal aspect less often, with a statistically significant difference (p = .000 for both tutor and peer feedback).

Table 5.7 Differences between genders

Feedback	Male	Female	Mann-Whitney U	p-value	Cohen's d
	% rare and never to receive the feedback				
Tutor feedback in PBL					
What 1	13.6%	18.6%	69,400	.704	3.4
What 2	15.3%	22.0%	62,998	.013	3.4
How	24.2%	33.6%	60,331	.001	3.4
Why 1	28.2%	39.8%	60,559	.001	3.4
Why 2	28.6%	38.9%	60,045	.000	3.4
Positive	25.9%	36.4%	61,937	.006	3.4
Negative	39.9%	55.0%	55,598	.000	3.4
Peer feedback in PBL					
What 1	15.6%	16.9%	34,335	.601	3.4
What 2	23.0%	29.1%	31,896	.376	3.4
How	29.3%	37.9%	31,398	.205	3.4
Why 1	24.9%	33.1%	31,636	.294	3.4
Why 2	34.9%	47.0%	29,617	.028	3.4
Positive	24.5%	21.4%	33,633	.865	3.4
Negative	37.0%	51.6%	26,702	.000	3.4

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

5.3.3 Differences between modes

One of the objectives of this research is to examine different modes of feedback in PBL (i.e. face-to-face and written). To explore this difference, especially how the different modes influence the quality of feedback in PBL, the Kruskal-Wallis test was used. Although two feedback modes were examined in this research, a third option of receiving both modes was offered to students, so they could report their experience more comprehensively. The results are shown in Table 5.8 below.

Table 5.8 The difference between modes

Feedback	Face-to-face	Written	Both	Kruskal Wallis	Degree of freedom (df)	p-value	Cohen's d
	% rare and never to receive the feedback						
Tutor feedback in PBL							
What 1	20.1%	35.3%	6.1%	58.568	2	.000	.6
What 2	24.4%	11.8%	7.0%	63.938	2	.000	.6
How	13.8%	52.9%	21.0%	10.074	2	.006	.2
Why 1	38.8%	43.8%	23.4%	27.554	2	.000	.4
Why 2	38.4%	47.1%	24.2%	16.664	2	.000	.3
Positive	35.0%	31.3%	22.3%	21.935	2	.000	.3
Negative	54.9%	31.3%	32.9%	42.434	2	.000	.5
Peer feedback in PBL							
What 1	21.6%	18.2%	7.1%	20.818	2	.000	.4
What 2	33.6%	18.2%	14.1%	34.965	2	.000	.5
How	36.7%	27.3%	28.3%	9.803	2	.007	.2
Why 1	30.9%	45.5%	23.7%	11.295	2	.004	.3
Why 2	43.8%	36.4%	35.5%	4.654	2	.098	.1
Positive	26.0%	27.3%	17.2%	12.184	2	.002	.3
Negative	51.1%	18.2%	34.3%	21.534	2	.000	.4

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

This table reveals several things. First, the students who reported receiving both modes of feedback reported fewer shortcomings in receiving feedback from both sources for most purposes. For example, students who chose "both" reported significantly fewer negative experiences (6.1%) in receiving tutor feedback about what aspects of a performance were good than students who chose the other modes ($x^2[2] = 58.568$, $p = .000$), with an intermediate effect of size ($d = 0.6$). That percentage (6.1%) is a small proportion compared to 20.1% for verbal feedback and 35.3% for written feedback.

Another notable difference is that verbal feedback was considered better than written in the case of tutor feedback; however, the experience of peer feedback was almost the opposite, as shown in Table 5.8. Tutor feedback about how to do better was given significantly less often in written mode ($x^2 [2] = 10.074$, $p = .006$), with 52.9% of students never or rarely receiving it, compared to the verbal

mode (13.8%). In contrast, peers gave feedback about how to do better significantly less often in the verbal mode at 36.7% compared to the written mode at 27.3% (x^2 [2]= 9.803, p = .007).

In addition, negative feedback about what needs to be improved ("what 2" as referred in Table 5.8) or containing a negative personal feedback was given significantly less often in the verbal mode than the written mode by both sources. In other words, tutors and peers avoid giving negative feedback face to face.

Feedback quality is evidently influenced by its mode and source, so receiving both modes of feedback leads to the best experience in PBL. However, these interesting findings need further qualitative investigation to explore the reasons behind these differences.

5.4 Differences between ordinal variables

The Spearman test was applied in the analysis of ordinal variables. The ordinal variables that were analysed to examine their effect on the feedback process were group size and students' academic level.

5.4.1 Differences between academic years

This research aimed to examine potential influencing factors (independent variables) on the feedback process in PBL. To that end, it aimed to examine whether receiving feedback (dependent variable) is positively or negatively associated with students' progress through school (independent variable). The Spearman test was applied, and the results are presented in Table 5.9.

This table shows that only a few significant correlations were found. Only two tutor feedback purposes were statistically significantly different between different academic years. There was a significant negative correlation between a higher academic year and receiving feedback about why a performance was good or needed improvement ($rs[5] = 0.079$, $p = .031$), with 17.2% of first-year students reporting shortcomings in receiving such feedback compared to 37.1% of second-year students. In other words, the amount of that type of feedback decreased from the first to the second year.

Although that is a significant correlation ($p > .05$), it is considered negligible ($rs = -.079$) based on Hinkle et al.'s (2003) interpretation of correlation coefficient size. According to Hinkle et al. (2003), a correlation coefficient of less than 0.3 is negligible, one between 0.3 and 0.5 is low, one between 0.5 and 0.7 is moderate, one between 0.7 and 0.9 is high and one greater than 0.9 is very high. Therefore, the size of the correlation between academic year and feedback quality, though statistically significant, is not of an adequate size to indicate a correlation.

Table 5.9 Correlation between academic levels and feedback quality

Feedback	1st year	2nd year	3rd year	4th year	5th year	6th year	Rs	p-value
	% rare and never to receive the feedback							
Tutor feedback in PBL								
What 1	8.5%	16.8%	20.0%	12.8%	13.3%	0.0%	-.033	.367
What 2	7.4%	22.7%	18.8%	17.0%	13.3%	6.7%	-.040	.284
How	14.9%	31.4%	29.0%	38.3%	40.0%	20.0%	-.071	.051
Why 1	17.2%	37.1%	37.1%	34.0%	26.7%	26.7%	-.079*	.031
Why 2	20.2%	37.2%	34.4%	34.0%	46.7%	20.0%	-.075*	.039
Positive	25.8%	30.4%	34.8%	30.4%	33.3%	20.0%	-.039	.288
Negative	32.3%	53.4%	51.4%	34.0%	33.3%	6.7%	.011	.769
Peer feedback in PBL								
What 1	7.8%	16.2%	24.3%	5.6%	0.0%	11.1%	-.055	.212
What 2	18.2%	27.7%	29.8%	22.2%	14.3%	11.1%	-.034	.440
How	26.0%	35.2%	35.1%	38.9%	28.6%	11.1%	-.012	.781
Why 1	16.9%	31.4%	33.3%	30.6%	0.0%	11.1%	-.064	.144
Why 2	30.3%	42.6%	41.7%	55.6%	28.6%	22.2%	-.054	.222
Positive	19.5%	23.8%	27.2%	16.7%	0.0%	11.1%	-.014	.758
Negative	29.9%	49.2%	44.4%	50.0%	28.6%	22.2%	-.039	.374

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

5.4.2 Differences between different group sizes

Another ordinal variable tested was group size. As explained in the descriptive analysis section, students were asked about their PBL group size and were given four response options: 3–5, 6–8, 9–11 and greater than 11.

At the beginning of the analysis process (i.e. ordinal variable correlation analysis using the Spearman test), all response options were included. However, because only three students (0.4%) reported a group size of 3–5, as shown in Table 5.2, this option was excluded, and the data were re-analysed. No significant difference was found between the two analyses. The results of the re-analysis are shown in Table 5.10.

The most interesting aspect of Table 5.10 is the statistically significant negative correlation between group size and tutor feedback for all purposes. There was a statistically significant negative correlation between feedback about what needed to be improved and group size ($r_s[2] = -.133$, $p = .000$). However, based on Hinkle et al.'s (2003) interpretation of correlation coefficient size, this correlation size (-.133) is, again, negligible.

The quality of peer feedback was less associated with group size compared to the tutor feedback, i.e. peer feedback quality was not influenced by the group size, as shown in Table 5.10.

The next part of this chapter analyses the second part of the survey, comprising open items. This analysis is followed by the results of the qualitative studies.

Table 5.10 Correlation between group size and feedback quality

Feedback	6-8	9-11	Greater than 11	rs	p-value	N
	% rare and never to receive the feedback					
Tutor feedback in PBL						
What 1	21.1%	13.9%	24.4%	-.073*	.045	748
What 2	13.2%	15.9%	31.3%	-.133**	.000	746
How	15.8%	26.7%	41.0%	-.141**	.000	746
Why 1	31.6%	31.6%	44.4%	-.102**	.005	746
Why 2	31.6%	30.6%	48.9%	-.138**	.000	746
Positive	21.1%	29.4%	42.2%	-.119**	.001	744
Negative	40.5%	45.6%	57.0%	-.093*	.011	744
Peer feedback in PBL						
What 1	19.2%	15.8%	16.5%	.002	.956	517
What 2	15.4%	25.9%	28.6%	-.047	.286	516
How	26.9%	33.7%	34.5%	-.029	.504	517
Why 1	11.5%	28.3%	35.7%	-.100*	.024	516
Why 2	24.0%	41.1%	41.7%	-.052	.237	515
Positive	15.4%	22.4%	27.4%	-.091*	.039	516
Negative	30.8%	44.2%	47.6%	-.077	.082	517

What 1= I receive feedback that tells me **what** I am doing **well**/ **What 2**= I receive feedback that tells me **what** I can do **better**
How= I receive feedback that tells me **how** to do better/ **Why 1**= I receive feedback that tells me **why** what I did was good or bad
Why 2= I receive feedback that tells me **why** I need to do better/ **Positive**= I receive feedback that involves a **positive personal** aspect
Negative= I receive feedback that involves a **negative personal** aspect

5.5 Open item results

There were a variety of student responses to the survey's open text items, which sought students' perceptions of the positive and negative features of feedback. For example, an item that sought perceptions of positive features was:

"Please think about your experiences of receiving feedback through different approaches (e.g., face-to-face, written) and different sources (e.g., peer, tutor). In your words, what features of feedback help you [or are unhelpful, as in the other item] to improve your performance?"

A coding strategy to analyse students' responses qualitatively revealed different themes, which represent students' perceptions of the feedback experience in PBL. Several features influenced views on feedback quality.

5.5.1 Detailed feedback

Students gave varied responses regarding the importance of receiving detailed feedback for "how to improve." According to the students' responses, poor quality feedback is:

> *"Not mentioning what I am good at. Not giving any solutions to my problem."*
>
> *"Focusing only on the negative performance."*
>
> *"Very general feedback like 'you were good' . . . Good in what? bad in what?"*

5.5.2 Feedback skills

Furthermore, students frequently mentioned skills in giving feedback, reporting that it was positive to receive feedback as a "sandwich," beginning with positive feedback, followed by something negative:

> *"starting with students' strong point, to foster students' confidence, then followed by weak points"*

Also, many students complained about impolite feedback, believing that this was a negative feedback feature:

> *"Harsh feedback that is inappropriate always worsens cases."*
>
> *"Mentioning a negative comment aggressively."*

5.5.3 Authenticity and credibility of feedback

Students frequently reported on the authenticity of feedback; they believe it is a negative feature of feedback to be inauthentic:

> *"I think my classmates aren't 100% honest in their feedback to avoid personal problems with each other, and this is a big issue."*

Students also reported on the effect of credibility of feedback given, explaining that credible feedback should be based on criteria:

> *"There are some peer feedback is based on invalid criteria."*

5.5.4 Clarity of feedback

Other factors reported to influence feedback quality included the clarity of the feedback:

"Straight to the point. Very clear and precise."

5.5.5 Individualised feedback

Students considered good feedback to be individualised and to a specific student:

"Directed to me, not to the whole group, specific."

There were some complaints about receiving feedback that was not individualised and also repetitive and therefore unhelpful:

"Also, some of them (i.e., tutors) don't give good feedback at all. Just saying the repeated ideas without comparing between now and the past to consider the improvement."

5.5.6 Feedback mode

Verbal feedback was considered to be positive, as one student commented:

"Verbal feedback would be better, especially as you can give a positive impression to encourage these kinds of actions, and you can explain too if there is a misunderstanding."

5.5.7 The privacy

Finally, students reported that the place in which feedback is given influences feedback quality. Giving feedback in front of group members instead of in private was considered a negative practice:

"Receiving negative feedback in front of the other students."

"Sometimes, feedback is better received in private."

5.5.8 Feedback timing and follow-up process

Students' reported that a positive feedback experience happens when the tutor immediately gives the feedback. That feedback should then be followed up to check students' progression:

"To do it at the same time in same session and tutor keeps on telling us how we progress each week"

The responses to these open items gave some insight into students' perceptions of the feedback process in PBL. However, some responses were short and lacked clarity due to the nature of survey reports; they are individual responses rather than a consensus opinion reached through discussion in an interview. For this reason, a qualitative study was required to discuss further and clarify these responses.

In conclusion, different tests revealed interesting results that required further investigation through a qualitative study (see Table 5.11 for the collated key conclusion). Peer feedback was found to be preferred by fewer students than tutor feedback, as more than a third of participants (38.6%) reported preferring tutor feedback only. Also interesting are the statistically significant differences between males and females in reporting their feedback experience, with females reporting less satisfaction with the feedback experience.

The next chapters report the findings from students' focus group study and semi-structured interviews with tutors. Then, the triangulation of quantitative and qualitative results and between the different stakeholders (i.e. students and tutors) is discussed.

Table. 5.11 Conclusion of the key results

Theme	Results
Feedback mode	32% of the participants reported receiving both modes of feedback.
	63% of the participants reported receiving only the verbal mode of feedback.
	Verbal feedback is much preferred to written mode of feedback.
Feedback source	Most of the participants (70%) receive feedback from both tutor and peers.
	58.5% of the participants prefer both sources.
	38.6% of the participants prefer only tutor feedback.
Differences between gender	Female students reported more dissatisfaction with the feedback experience than males.
	Female students are less likely to be given feedback that contains negative personal aspects.
Differences between feedback modes	Best feedback experience is reached by a comprehensive mode of feedback, including receiving both verbal and written feedback.
	Verbal feedback is preferred to written feedback.
	Tutor and peers avoid giving negative feedback face to face.

Chapter 6: Results - Focus Group Study

6.1 Introduction

This chapter describes the results of the qualitative data analysis from students' focus group discussions. The qualitative focus groups were conducted to explore the reasons behind the survey results and to understand the students' experiences in more depth with regard to the feedback process in PBL. As referenced in the methodology chapter, this research takes into account both research paradigms, positivist and interpretivist, allowing a pragmatic view of the research.

There were 12 focus groups, comprising six groups of men and women (12 in total), and each group had six to eight students. As pointed out previously (page 14), the male and female students were educated separately in Saudi Arabia because of their cultural background. Therefore, they participated in these research focus groups separately. Four of the six medical schools, that participated in the quantitative stage, also participated in this qualitative stage. There were five focus groups conducted in the first medical school, one in the second, two in the third and four in the fourth medical school (see Table 6.1).

Table 6.1 Focus group participants

1st school					2nd school	3rd school		4th school			
Male			Female		Female	Female		Male			Female
1st group	2nd group	3rd group	4th group	5th group	6th group	7th group	8th group	9th group	10th group	11th group	12th group
n= 7	n= 8	n= 6	n= 8	n= 7	n= 8	n= 8	n= 8	n= 8	n= 8	n= 8	n= 7
Total = 91 students											

The variation in participation rates between the different medical schools was caused by two factors; firstly, due to the fact that in the second medical school, there were fewer female students who participated in the survey (the quantitative stage). In other words, few female students from the second school participated in the qualitative stage because only few of them participated in the quantitative stage (the first stage). Secondly, due to the fact that in the third medical school, male students declined to participate, so only two female groups were involved in this qualitative stage. From this school, a large sample was anticipated at this qualitative stage because there was a high response rate in the quantitative stage (39.5% of all participants). This complexity will be discussed later in the researchers' reflection on the research process.

Qualitative data was analysed through thematic coding. The raw data was read, and coding was made for each part of the discussion. Then, similar codes were grouped under representative themes as explained in detail in the method chapter (page 90).

Themes were developed that represent students' perceptions regarding the feedback process in PBL. These themes will be described and supported by examples of quotes from the interview data.

Three main themes emerged: (1) students' expectations of best practice in the feedback experience, (2) the reality of the feedback process and (3) potential factors that influence students' experience of the feedback process. These key themes will be further described in more detail involving relevant quotes from the students' focus group discussions.

6.2 Student expectations of best practice in feedback experience

The first set of group questions aimed to explore students' understanding and awareness about feedback, what feedback means for them and what made feedback more effective. Under this theme, there are three sub-themes: feedback definition, role of the feedback in PBL, and feedback quality.

6.2.1 Feedback definition

Students defined and viewed feedback from different points of view across the focus groups, Table 6.2 shows how these different points were represented in the focus groups.

There were some who stated that feedback is an evaluation:

> *'Feedback is about what you did good and wrong. It is evaluation'.*
> *(Females, 7th group, 3rd medical school)*

Another definition of feedback was as a constructive opinion on performance:

> *'An opinion from a person who watched my performance, in a constructive way not in a personal way'. (Females, 4th group, 1st medical school)*

Feedback was also defined as advice:

> *'The feedback is when someone gives you advice, or he could notice something about your performance, not just to criticise you but for improving'. (Males, 2nd group, 1st medical school)*

Another student described it as a response from others:

'It is about a response you can take from somebody to improve something'. (Males, 11th group, 4th medical school)

In addition, it was defined as a reflection:

"It is about reflecting on our experience…either positive or negative experience in a conclusive way…I reflect, as the person who experienced something, in order to improve that experience'. (Females, 8th group, 3rd medical school)

Thus, feedback was expressed by students who perceived it in a variety of different ways. There were some participants who perceived feedback as advice, a response or an evaluation. Although they differed slightly in their articulation, these definitions had a similar meaning in that feedback aims to improve current performance.

Table 6.2 Students' definitions of feedback

Feedback definition	1st G	2nd G	3rd G	4th G	5th G	6th G	7th G	8th G	9th G	10th G	11th G	12th G
Evaluation +/-	✓			✓			✓	✓	✓			✓
Correction (advice)		✓			✓	✓		✓			✓	
Reflection							✓	✓		✓		
Opinion				✓	✓		✓			✓		
Response from others			✓			✓					✓	

6.2.2 Role of feedback in PBL

Feedback has important functions that support students during their learning in PBL, as the participants discussed (see Table 6.3). Some students stated feedback is used to set targets.

'…we will be able [by feedback] to know what the exact target is, we will know what a tutor wants us to do, so we will be able to do it'. (Females, 6th group, 2nd medical school)

By receiving feedback, a student would know and understand the process of how to improve performance and reach a specific target.

> *'Regarding the positive points, it encourages me to continue further, and the negative points, they tell me about it and explain how to correct it'. (Females, 8th group, 3rd medical school)*

Feedback also plays a vital role in discovering where at performing strongly. This helps students use this advantage to their future work.

> *'Yes, being aware about a strong positive point in such a person is good to be used to advantage later. For example, if you are skilful in the English language, you would prefer to be the speaker or the case writer [in the PBL tutorial]…when I know my strength, I would develop it further and use it to my advantage'. (Males, 10th group, 4th medical school)*

Furthermore, students believed that positive feedback had a positive influence on their confidence:

> *'Positive feedback makes my performance more valuable…It will add value to my performance…it is more than that I just did a thing and finished; no, it will give me confidence'. (Males, 11th group, 4th medical school)*

……..

> *'I think it is related to self-confidence. I will know by the feedback where I am [i.e. my value]'. (Males, 11th group, 4th medical school)*

Students also highlighted the importance of feedback to explore external viewpoints on their own performance:

> *'For example, a feedback giver may have an opinion, and me [as a receiver] may have a different opinion. By the feedback, I would know her [tutor or peer] opinion'. (Females, 5th group, 1st medical school)*

……

> *'Sometimes, a person cannot realise her weakness points independently, so the benefit of feedback is to offer another viewpoint from another person'. (Females, 4th group, 1st medical school)*

Furthermore, when feedback is given in a group setting, it has a role in helping all the other listeners, meaning feedback is not limited to one individual, as highlighted in the quote below:

'Sometimes, when a person gives another person feedback in the group, I can also benefit from that feedback'. (Females, 4th group, 1st medical school)

Feedback also has a caring function.

'I just wanted to say that feedback, either positive or negative, means that the tutor is caring about me to improve, and that really encourages me to do better'. (Females, 6th group, 2nd medical school)

The students believed that feedback is crucial in the PBL curriculum and highlighted that PBL has a student-centred learning philosophy:

'I do not think that feedback is something that could be optional from the tutor. PBL is established and made for us [the students], and the tutor must give us feedback'. (Females, 7th group, 3rd medical school)

Additionally, students in PBL should have self-assessment skills.

'There is another feedback…in which the tutor asks each person to give herself feedback…I believe this is important in our learning, especially in PBL. While I progress in the school, I should know how to self-assess and how to develop myself'. (Females, 7th group, 3rd medical school)

Therefore, feedback has many important roles in PBL, such as for building confidence and improving performance. The participants articulated these feedback roles differently; however, they all re-establish feedback as a crucial process for students in PBL. Indeed, PBL has two features that make feedback necessary for students. The first feature is that the PBL curriculum is a student-centred learning process where students are expected to be active learners. The second feature is that PBL is a social learning environment where students work cooperatively in order to solve problems. Based on these features, feedback has a central role in supporting students as individuals through supporting and building confidence and as part of a social group, as sharing and listening to other comments and opinions learning through these interactions.

Table 6.3 Feedback role in PBL

	Feedback role in PBL
1	Discover points of strength
2	Positive feedback reinforces self-confidence
3	It helps to improve performance and reach required targets
4	Exploring external viewpoints can be useful
5	Small group feedback is helpful to other group members
6	It supports students' emotions through its caring function
7	It is crucial for students as the central stakeholder in the PBL curriculum
8	It helps to develop self-assessment skills

6.2.3 Feedback quality

During the focus group discussions, students' perceptions about the different purposes of feedback were explored. As explained previously (page 51), feedback has different purposes. Feedback aims to tell what is good in one's performance, or tells one what needs to be improved upon, while other feedback may aim to explain how improvements could be achieved. (see Table 5.4, page 98).

The perceptions about the different purposes of feedback and feedback quality are described here together because they affect one another. In other words, if feedback serves a particular purpose, such as explaining how to improve, that feedback would be considered quality feedback. This will be explored and illustrated further by representative quotes below.

Telling students about strengths and weaknesses

In regard to the quality of feedback, students reported that the quality of feedback is enhanced if the feedback indicates the positive aspects of performance and highlights shortcomings, these are the essential primary purposes of feedback. Furthermore, data indicated that feedback is more qualified when it is balanced between positive and negative comments, so feedback should not be solely based on what went well in their performance, or, what did not, as demonstrated in the following quotes:

> *'Feedback really helps not just to tell a negative issue in your performance; however, even positive issues could be mentioned and then can plan to develop it, if that is possible'. (Males, 1st group, 1st medical school)*

……

'In my opinion, giving feedback only about the positive performance does not help me improve…It should have both negative and positive aspects'. (Females, 8th group, 3rd medical school)

Furthermore, when a student is informed about what should be improved, it is important to follow negative feedback with positive feedback, when that student has achieved the required target. This affirms to the learners they have been successful.

'I may have some negative points in my performance, and a tutor may comment on that to help me improve. However, when I reach the required level, she [the tutor] should give me positive feedback to let me know that I improved and did the required job'. (Females, 6th group, 2nd medical school)

Telling students why performance was good or poor

Another factor that determines the quality of feedback relates to specific points or detail about what went well and what didn't. More specifically, telling students why their performance was good or bad in order to explain reasons and criteria relating to the assessment, i.e. the attribution of failure and success, as described by Hattie and Timperley (2007). This leads to students having a better understanding of why their performance was poor. A number of students explained that the quality of feedback is affected by not only being told what went well and what didn't, but by also backing these comments with justification, which is important in order for feedback to be believed.

'If he [i.e. a tutor] tells me what is wrong in my performance, I will not benefit from that feedback unless he explains why that was wrong and what I was supposed to do instead'. (Males, 11th group, 4th medical school)

Supporting the claims with justification had a positive and motivating effect on the receiver to develop and change.

'If they [i.e. feedback givers] give me the reasons [i.e. why my performance was bad] that would make me keener to fix them'. (Males, 10th group, 1st medical school)

Furthermore, students believed that this feedback approach is more critical in the first year:

'I think this feedback is very important, especially in the first year…because students are just starting in PBL and are not familiar with the curriculum, so weaknesses and challenges should be discovered in an early stage'. (Males, 10th group, 4th medical school)

Telling students how to improve

In addition, a large group of participants believed that a crucial purpose of feedback is to provide clear guidance on how to improve.

'It is the most important one [to tell how to improve] for me actually to improve because there are a lot of people who are curious to know about how to improve themselves, but they lack the guidance to work on that'. (Females, 7th group, 3rd medical school)

…….

'We need these details [how to do better] for career advancement, so we need a suggested plan…instead of being told what is right and wrong only'. (Males, 11th group, 4th medical school)

The data suggests that following negative feedback with guidance on how to improve is an effective way to make students accept the negative feedback. To clarify, it is important if students are given negative feedback, they are also given constructive ways to improve their performance, as demonstrated in the following quote:

'…that [telling students how to improve] will encourage students to accept further feedback on weaknesses because she [the student] knows that "how to do better" will be given at the end'. (Females, 5th group, 1st medical school)

Although most students perceived focusing on the process of improvement as an important purpose of feedback, some students believed that receiving this feedback was unnecessary and time consuming:

'I think it is time-consuming which potentially leads to extra details and leaving something more important'. (Male group, 9th group, 4th medical school)

Other believed this feedback should be self-regulated. In other words, even though they have being told by others what is right and wrong in their performance, they prefer to find their own solutions for improvement:

'I think it is not an important thing to have this feedback. I only need to know what I did right and what is needed to be better and that's it. Regarding the plan of how to do better, I think I will do it by myself'. (Males, 11th group, 4th medical school)

Moreover, there was a preference for being told how to improve as a dialogue. In this situation, the data suggested students and tutors are better off discussing ways to improve based on both of their views and ideas. Thus, students are not entirely independent; instead, they are directed and facilitated by a tutor. This position of balance, between being completely independent and completely dependent on a tutors' guidance, is illustrated by the quote below:

'I do not prefer to be told how to improve, but I prefer to be asked how I would improve myself. Then, the tutor could guide me and correct my self-regulated plan. I prefer to have a conversation and negotiation'. (Females, 12th group, 4th medical school)

Telling students why change is important

Another purpose of feedback discussed in the focus groups was about telling students 'why it is important to change'. Some students reported this feedback made them more 'internally motivated':

'…if he [the feedback giver] tells me that I need to improve this thing [where the feedback is given] for future surgical practice, I would feel that this [part of my] performance is important [to be fixed]'. (Males, 2nd group, 1st medical school)

Although this feedback was considered to support internal motivation, as perceived by some students, others thought that this feedback was unnecessary.

'This feedback is the least important one because it is obvious why there is a need to do better: for the grade'! (Females, 8th group, 3rd medical school)

This student (quoted above) found this purpose -to tell students why it is important to change- unimportant. This view maybe reflective of the general expectation of medical students to be high performing. Thus, students had a variety of perceptions regarding the importance of different purposes of feedback.

Targeting personal aspects in students

Feedback that includes comments on personal aspects relating to the students was discussed. The purposes of feedback previously described above were related to the task. However, personal aspects of feedback refer to observations about the students on a personal level and not about their performance. One student believed that personal feedback could help diagnose and treat a possible reason behind a poor performance:

'If a tutor tells me, "Why don't you participate? Are you anxious?" This is a point in my personality...if the tutor discusses this point and advises me to be more confident "you should be confident, you do not have a problem that makes you not confident", I will improve'. (Females, 7th group, 3rd medical school)

Another student mentioned that the delivery of this element is important, and a positive outcome could extend beyond the PBL tutorial setting:

'If someone politely tells me this feedback, I will develop myself because this is not just for PBL, it is for the future'. (Females, 8th group, 3rd medical school)

In summary, students from different genders and schools mostly agreed that purposes of feedback discussed in this theme are crucial for learning in the PBL setting. There was agreement that there are some core aspects that feedback should utilise: defining exactly what good and weak performances are. In contrast, there were disagreements about feedback on telling students how to improve, and whether this should be self-regulated or not.

It was evident from the data that some purposes of feedback were more relevant for the PBL setting, where a student is central in the educational process. For example, negative feedback was less likely to be accepted unless they were told why their performance was weak. Thus, instead of passively receiving external feedback as a fact, it is crucial the student is convinced of the reasons in

PBL. Furthermore, when there was feedback given telling students how to improve, they preferred dialogue to discuss their points and ideas. This confirms that the participants were engaged student-centred learning. The next theme describes the reality of receiving feedback in PBL setting.

6.3 The reality

The reality of students' current experiences in receiving the feedback in PBL will now be considered. In the previous theme, students' expectations of the best practices for the purpose of feedback were described; this section examines the extent to which the reality of the feedback process matched these expectations. There were varied perceptions relating to whether the students' experiences were positive or negative. Therefore, this section is divided into two sub-themes: positive and negative experience.

6.3.1. Positive experiences

Receiving regular and helpful feedback

During data collection, some students expressed having had good experiences of receiving feedback in PBL. They pointed out that they regularly received individual feedback that matched their needs. This individual feedback qualified as matching their needs as it served the different purposes of feedback, as explained in the previous section:

> *'…in the midterm [which happens after the fifth tutorial] she [the tutor] gives us individual feedback for every case we have discussed [in the PBL tutorial].' (Females, 12th group, 4th medical school)*

Facilitating peer- and self-assessment

Participants reported that some tutors guided peers to give more effective feedback. As discussed in the previous section, if feedback serves specific purposes, its quality is enhanced. In the quote below, students mentioned that tutors encouraged their peers to provide feedback that illustrates why performance was considered good or weak:

'sometimes if a peer gives feedback, he might be asked by the tutor "why did you see these points as wrong by your peer?"' (Males, 3rd group, 1st medical school)

In addition, self-assessment was facilitated through a dialogue between the student and tutor regarding how the student assessed themselves:

'We have a form containing a section for self-assessment, so I write about myself, for example, about my participation in the tutorial group… then I meet the tutor to discuss what I have written.' (Females, 12th group, 4th medical school)

Training students to give feedback

In the previous section, students stated that they were guided by tutors while they were assessing peers and also themselves. However, this was not the only kind support they received. There were also separate sessions offered to students, teaching them how to provide feedback and explaining why feedback is important:

'I really got benefits from that session, honestly. I still remember the Sandwich technique in giving feedback [positive-negative-positive].' (Males, 2nd group, 1st medical school)

Feedback is valuable for more than just learning development

In addition to the positive experiences of learning and developing one's performance, feedback was found useful for developing as a person:

'…feedback helped me in two ways: to face [improve] my fear, so in the personality aspect; and to focus on problems I have in the knowledge [in order to learn better], so in knowledge aspect.' (Females, 7th group, 3rd medical school)

Overall, there were several positive expressions of the feedback process in Saudi medical schools. These positive experiences were not limited to learning; they additionally related to person development and the development of peer assessment skills. In regard to personal development, PBL is a student-centred form of learning, and having a confident and active learner is essential for the learning process. PBL also offers a cooperative learning environment, and so peer assessment is an

important element. However, not all of the participants' experiences were positive; there were some shortcomings in the feedback process as well.

6.3.2. Negative experiences

Opportunities for feedback were tutor-driven

In the focus group discussions, the researcher asked students whether they had received feedback, and how the quality of feedback if it was given. The main point raised in the data was that receiving feedback was mostly initiated by the tutor, and the student's experience of receiving feedback varied, depending on which tutor is facilitating the PBL tutorial, an issue that was a source of complaint for most students, as highlighted below:

> *'There are some tutors who never give feedback, and there are others who give only when sought, and others who give by themselves.' (Females, 7th group, 3rd medical school)*

Although most students believed that tutors should initiate giving feedback, some students expressed the opinion that feedback should be given only at the student's request:

> *'I think we should continue like our current experience is going: we do not receive feedback unless we seek it.' (Males, 10th group, 4th medical school)*

Infrequent and low-quality feedback

Feedback opportunities were tutor-driven, and participants reported that feedback was rarely received by students, as many tutors did not voluntarily offer it, with some students stating that receiving feedback in their school is very rare, as described in the following quotes:

> *'I remember a tutor gave me individualised feedback through an email, it was my first experience of feedback in PBL, and I was so excited! ... and that is the only experience I had.' (Females, 7th group, 3rd medical school)*

> ……..

> *'The problem is that some tutors do not give a student feedback; it often happens that he only gives a grade without any feedback… He [the student] would take the grade only. If it was good, he would be happy, and if not, he*

would continue his current level of performance and skill.' (Males, 2nd group, 1st medical school)

Furthermore, when feedback was given, its quality did not meet students' expectations. The participants frequently mentioned standardised feedback as an example of a negative experience, where one standard piece of feedback given to every student without of being individualised to individual student needs:

'[about] 60% of tutors who provide feedback, only give standardised feedback' (Males, 2nd group, 1st medical school)

Several participants stated that their feedback was limited to only negative aspects of their performance:

'Regarding our tutor, she only focuses on the negative performance, there is not any positive comment, she [the tutor] says, "you did a mistake in all these things" and that's it." (Females, 6th group, 2nd medical school)

Alternatively, general positive feedback was provided without any details that will help development:

'I have never received useful feedback. I am just told "wow you did good job" when I do something good' (Females, 8th group, 3rd medical school)

Students also reported receiving both positive and negative feedback, but the feedback was not helpful beyond basic points:

'The tutor only gives what is right and wrong, so not serving other purposes of feedback.' (Females, 4th group, 1st medical school)

Students believed that their experiences of receiving feedback should have included an explanation regarding how to improve:

'it [the feedback] was always limited to only negative comments… It should contain how to do better.' (Males, 9th group, 4th medical school)

……..

'If I [as a peer] give a feedback, I try to tell "how to do better" because some students have a challenge in improving themselves. I found that this purpose of feedback [to explain how to improve] is not provided, neither by tutor or peer' (Females, 5th group, 1st medical school)

Some of the participants perceived that the self-directed learning (SDL) strategy was the main reason for insufficient feedback about how to improve. Participants reported that tutors asked students to reflect on grade awarded independently. In this situation, students were required to indicate what went well and what did not go well, and how they could improve. Thus, the feedback was completely self-directed, which led to dissatisfaction, as these quotes demonstrate:

> *'We are required to do this feedback while we reflect… reflect on a given grade… So, tutors assess students based on specific criteria, and then student reflects why the performance had been a good or bad and what the student is going to do [for improvement].' (Females, 4th group, 1st medical school)*

……..

> *'We do not receive it [i.e., feedback on how to do better] … Here [in the school], if we ask tutors [how to do better], they answer "it is SDL".' (Males, 2nd group, 1st medical school)*

The final point described in data relating to this subtheme was that their negative experiences with feedback to date resulted in them not engaging in the feedback process:

> *'I do not know, maybe 90 to 95% of students do not care about the feedback. And the reason is the current experience.' (Males, 2nd group, 1st medical school)*

Therefore, the analysis of the focus group data revealed that although there were some positive experiences, including having tutors who provide frequent, individualised feedback to students, there were many negative perceptions about insufficient feedback in terms of quantity or low-quality feedback. This difference in experience could be attributed to the different medical schools that the participants came from, with the second and the third medical schools reporting the most negative experience. However, individual participants may have had different tutors and, in turn, different experiences.

In conclusion, tutors have a crucial role in the feedback process, and feedback practices amongst tutors are not standardised. Students perceived that SDL had a negative effect on the feedback process in PBL, as they found that they were expected to self-assess as part of the SDL approach. Further factors that positively or negatively influenced students' experiences of the feedback process are discussed in the following section.

6.4 Factors influencing the feedback process

Through the analysis of student focus group data, a variety of factors were found that influence the feedback process. These factors have been organised into following themes: credibility and competence of the giver and receiver, feedback authenticity, relationship and culture, learning environment, feedback mode, and feedback source. While these factors will be discussed under relevant sub-themes, they are related and influenced by each other.

6.4.1 The credibility and competence of giver and receiver

Many students pointed out factors related to credibility and competence of the two partners in the feedback process: the giver and receiver. Students believed that these factors played a significant role and had an effect on their current experiences.

Internal motivation to give feedback

Frequently mentioned factors were tutor taking initiative and their motivation to give feedback:

> *'There are some tutors who never give feedback, and there are others who give only it when sought, and others who give by themselves.' (Females, 7th group, 3rd medical school)*

Both tutors and peers should be motivated internally to give feedback:

> *'I believe that current peer feedback is just a routine issue. I mean that, when I give the feedback [as a peer], I do not aim to instruct my peer. Instead, the aim is to say any feedback just to show our tutor that I am giving a peer feedback, to finish my job and that its.' (Males, 1st group, 1st medical school)*

Therefore, the student feedback experience was negatively influenced by possible disinterest from the giver (tutor or peer). Tutors might not give feedback, and peers provide redundant or unhelpful feedback to satisfy minimal requirements.

Skills in communicating feedback

Feedback skills were also influenced by giver credibility and competence. Many students stated skilful feedback giver was an important aspect:

'All what we have discussed about feedback [in the focus group], either from peer or tutor, depends on the receiver's personality and the giver's skills.' (Females, 7th group, 3rd medical school)

……..……..

'Feedback might be constructive and helpful for students…but also it could upset the student, instead, by being too negative…the feedback giver skill is the reason behind that.' (Males, 9th group, 4th medical school)

Participants believed that giving feedback politely was better than taking an aggressive approach, which would determine the receivers acceptance. They also found effective strategies and skills for feedback givers, such as using a first-person pronoun in giving corrective negative peer feedback, for example 'I found this way helped me' or 'If I were in your place, I would do this and this'. In other words, students speaking about self-experience and planning was better than blaming and criticising others when commenting on negative performance. Giving feedback in a 'sandwich' style - positive-negative-positive - was another recommended method.

Objective assessment

Students indicated that peers usually gave inauthentic and subjective. However, students perceived that giving feedback based on objective criteria helped peers be more critical and authentic, resulting in receivers trusting such feedback:

'there are some students assessing unimportant aspects of performance and leaving something more important, but by using such objective form, peers would be more accurate and objective, e.g., if an item of the criteria is related to presentation slide colour, he [the peer] has to assess that.' (Males, 1st group, 1st medical school)

Feedback giver experience

Another factor bolstering the receiver was a giver experience on the issue that the feedback is given for. To illustrate that, if a peer is assessing the issue of referencing key sources for example,

the peer should have sufficient background experience on how successfully perform the referencing of key sources:

> *'I believe that if a peer gives negative feedback [on a problem he found in his peer], he should have experience on that problem and say how it could be improved...' (Males, 1st group, 1st medical school)*

First impression

First impressions also influenced the feedback givers credibility. Students believed that first impressions influenced the tutor feedback credibility negatively, as tutors tended to give more positive feedback when first impressions were positive and vice versa:

> *'If a tutor or peer knows that this student is excellent, that will make all following feedback more positive...' (Males, 9th group, 4th medical school)*

> *……..*

> *'Some tutors take first impressions about students from the first session, e.g., if this is an excellent student, he will always be an excellent in his belief…and if a bad performer student developed and improved later, he will be still a bad one in his belief..' (Males, 2nd group, 1st medical school)*

If first impressions entirely influenced feedback content, tutors could be seen as incompetent feedback givers, leading students to be disinterested in the feedback process.

Seeking feedback

Students believed that taking the initiative to seek feedback positively influenced student feedback experience. Respondents perceived students were varied in their desire to seek tutor feedback.

> *'Some of them give feedback, and some do not ever give. Some of them cut from students' marks, and then if students care about that [i.e. to know why the low grade was given], they should go to her [i.e. the tutor] to ask about that cut.' (Females, 6th group, 2nd medical school)*

> *……..*

'…It [i.e. believing the importance of feedback] depends on how much the student cares…' (Males, 11th group, 4th medical school)

Thus, receiving the feedback is influenced by students seeking for it.

Feedback interpretation

Student interpretation, as a feedback receiver, influenced how feedback is utilised. In the quote below, the student stated that peer feedback was interpreted negatively:

'I just ignore any comment from my peer because it is often for subjective [personal] reasons not to improve me.' (Females, 8th group, 3rd medical school)

Hence, this student interprets peer feedback as non-constructive. Some students might, therefore, have negative interpretations of peer feedback.

Maturity

A group of participants found the maturity of the receiver could positively influence the feedback interpretation. The positive change happened students, while progressing in the medical school, started move toward perceiving feedback as a constructive tool instead of just criticism.

'…in the first academic year [first level], we were not accepting negative feedback and there could be a negative reaction to that. Now [third year] it is different; tutor's feedback is more effective (accepted)…there is a maturity in accepting negative feedback now.' (Males, 11th group, 4th medical school)

This maturity in receiving feedback can be facilitated by preparing and educating students in feedback aspects.

Overall, the focus group analysis revealed that partner characteristics and behaviours had obvious roles in the feedback process with both the giver and receive influencing one another. A feedback giver with insufficient skills could provide undesirable feedback, and feedback receivers lacking understanding about feedback's purpose could see feedback as an insult.

6.4.2 Authenticity

Authentic feedback is based on accurate and reliable facts as opposed to subjective opinions. A credible feedback giver uses objective and reliable criteria in their assessment. But respondents experience this is not always the case:

> *'It happens that a tutor gives a written feedback. When a student asks that tutor "Why is this written?" no logical answer is given except "mmm, you had spent too long a time in the presentation."." The reality is that student had not spent that long in the presentation. It is just fake feedback.' (Males, 2nd group, 1st medical school)*

> ……..

> *'If they [the peers] give me positive feedback, I would give them positive feedback, but if they give negative feedback, I would do the same [laughing].' (Females, 7th group, 3rd medical school)*

Thus, peer feedback can be deemed too positive or too negative, rendering it inauthentic. Such feedback is ignored, negatively influencing the value of PBL feedback process. The above quotes revealed that peers were mostly influenced by this factor, particularly by the student stating that the practice of peer feedback is controlled by reciprocity where a peer gives positive feedback expecting it to be reciprocated.

6.4.3 Relationship and culture

Relationship

Relationship and culture were identified within the data as playing roles in the feedback process. Regarding relationship, students considered peer relationships influential; with peer feedback working better if peers possessed a good and close friendship:

> *'It depends on if peers have a close relationship with each other or not. I mean that if a relationship is not strong enough, negative peer feedback may not be welcomed.' (Males, 1st group, 1st medical school)*

> ……..

'My peer would not give me feedback unless we have a good relationship…in this situation (with a good relationship), the feedback would be more objective (authentic), but most peers do not have a strong enough relationship, so most of the feedback then becomes unauthentic...' (Males, 11th group, 4th medical school)

Therefore, authentic peer feedback, which may contain some negative comments, is at risk of rejection unless there is a good and close relationship. This is because there is no fear of negative response between close friends.

Cultural similarities and differences

Another subtheme was culture, with many students perceiving that cultural similarities and differences could influence the PBL feedback process. As all participants shared a similar culture (Arabic), cultural differences occurred mostly with tutors.

'The assistant teacher [who just got a Bachelor's degree] understands you much better, especially if he is a Saudi. He is from your country and graduated from your school, so he is more aware about possible challenges that you may face…If we realise that our tutor is Saudi, we become more happy..' (Males, 3rd group, 1st medical school)

……..

'It [the cultural background of tutor] has a strong effect…the tutor sometimes criticises me on something based on her own country's culture, but these things could be normal in our culture.' (Females, 4th group, 1st medical school)

……..

'…receiving different purposes of feedback is influenced by the cultural background of the tutor…I found that the tutor who shared similar language with the student, the feedback tends to be more detailed, serving much of the purposes of feedback.' (Males, 10th group, 4th medical school)

In the last quote above, the student stated that language similarity could make feedback more productive, including different feedback purposes such as direction for improvement.

Another group of participants shared this view, confirming the role of language in the feedback process:

'We [as peers], when giving a feedback in Arabic, we feel relaxed and give detailed feedback, but when giving feedback in English, we become limited to one or two points only! I don't know why! So, when I talk in my native language, I would say what I really have in my mind, even though I am a good English speaker.' (Females, 4th group, 1st medical school)

Accordingly, cultural similarities might exert a positive influence on the feedback process, allowing tutors to understand student situations due to shared learning experiences. Deep feelings and complex thoughts can also be spoken easily in a native language.

6.4.4 Learning environment

An effective learning environment is important for PBL students, especially for the feedback process. The learning environment is not just limited to a physical location but includes the context and culture of where students learn. This interpretation of the learning environment is consistent with the definition on 'The Glossary of Education Reform' website (2013, accessed in 2021), which describes 'the diverse physical locations, contexts, and cultures in which students learn'. The data revealed factors related to the learning environment that were found to influence the feedback process.

Formative experience

Many students stated that new and unfamiliar experiences within higher education feedback exerted a negative influence on the feedback process. Participants commented that peer feedback was a completely new experience for them, having not performed peer feedback before joining medical school. Given this lack of experience, their responses tended to be disorganised, without a framework to guide them.

'We are not used to having peer evaluation. It never happened before we started learning in the university…so when we started learning in the university, every student deals with feedback in her own way..' (Females, 6th group, 2nd medical school)

A lack of any constructive feedback process resulted in students interpreting feedback negatively, especially in the case of peer feedback:

'It might be that we culturally do not accept the feedback philosophy. It is currently interpreted as this person (feedback giver) is insulting me!' (Males, 11th group, 4th medical school)

Reactions to peer feedback were more negative than to tutor feedback, perceptions of hierarchy. Some participants perceived peers as people sharing similar levels of competence and knowledge, and therefore incapable of assessment; only the tutor was viewed as qualified to give feedback.

> *'There are a lot of female students that have the idea that "You [the peer] are just a student like me, so why do you give me corrective feedback?!"' (Females, 5th group, 1st medical school)*

Moreover, what made student reactions to this new experience a negative one was that almost always medical students are perceived to be high performing. Thus, they were unused to hearing negative comments in performance evaluations:

> *'We, as medical students, were very excellent students in high school, obtaining high grades. Then [in medical school], you [as a feedback giver] criticise us, so that affects us emotionally, "why do you criticise me!?"' (Females, 4th group, 1st medical school)*

For these reasons, participants highlighted the importance of educating students and re-conceptualising feedback, making students aware about the purpose and rationale for feedback:

> *'I believe that they [course directors] should provide an educational session every year that makes us aware of feedback…about how it should be given...' (Females, 4th group, 1st medical school)*

There was a change in the experiences that students faced when joining higher education, and they were not culturally familiar with feedback processes and peer feedback specifically, making clarification vital. Although some students stated they had been well trained in feedback practice (See section Reality on page 121), others still needed support due to different schools providing different experiences. Furthermore, reassurance about feedback comprehension and practise is required, despite having received some educational sessions on feedback.

A good model for feedback practice

Participants reported that some tutors were not good role models for giving feedback:

> *'We are supposed to practice good skills in giving feedback, but unfortunately, they [the tutors] do not practice these techniques...' (Males, 2nd group, 1st school)*

This raises questions about the training that tutors receive. They should be practicing good feedback processes as they are seen as role model.

Proper PBL curriculum orientation

The PBL curriculum differs from traditional teaching, in that PBL is performed in a student-centred learning environment. Some participants perceived that tutors who are well-oriented in the PBL curriculum and process provide better feedback:

> *'I think the frequency of receiving the feedback mostly depends on the tutors. Most of them are not oriented in PBL, so they give low frequency feedback; however, some tutors are well-oriented in PBL, so they give sufficient feedback.' (Males, 11th group, 4th medical school)*

Based on this perception, there appears to be a perceived relationship between PBL orientation and feedback practice. This could be attributed to feedback being a more significant part of the PBL curriculum than in traditional teaching.

Speciality of tutor

Several students perceived the tutor's speciality as an influential factor. In the PBL tutorials, students try to solve a problem (as a case) while being facilitated by a tutor. Some participants found that if their tutor specialised in a case study's subject, the feedback was better.

> *'…he [unspecialised tutor] had insufficient knowledge; there were a lot of things that he was not aware of…the problem was that some students might not be well-prepared about the case, and the tutor was not able to guide and correct any mistake...the tutor could be a pharmacist, for example, and focus only on the part of medication and ignore the others..' (Females, 7th group, 3rd medical school)*

This was further supported when asked 'When do you receive good feedback?'

> *'It happens if the tutor is an expert in the case.' (Males, 3rd group, 1st medical school)*

Therefore, the feedback quality was reported to be improved when a tutor was better aware of student knowledge levels. Based on student perceptions, that level of awareness was achieved only by expert tutors.

Age of tutor

Another characteristic that students perceived as a factor was tutor age, with younger tutors being better able to create good rapport, in contrast with older professors, who were viewed as intimidating.

> *'…assistant teachers become very enthusiastic about teaching. Also, the short age gap between us makes the PBL tutorial environment more friendly...' (Females, 7th group, 3rd medical school)*

Prolonged contact between tutor and student

The length of the relationship was also important as tutors are more aware of student knowledge and performance levels. Prolonged contact develops tutor awareness about student weaknesses (past and present) while also showing how such students have progressed, making feedback more detailed and specific:

> *'While time is running and the student is progressing in the school, some tutors might still teach the same student since the student started in the first year. So, the tutor becomes more aware about the student's situation, so gives more detailed feedback...' (Males, 11th group, 4th medical school)*

Group size

Group size was deemed a factor influencing the feedback process according to the data, as smaller group size promoted familiarity between group members:

> *'…smaller group is better because each member would know the others very well…, so the feedback will be more detailed and in-depth.' (Females, 5th group, 1st medical school)*

It was also reported that small groups sizes created sufficient time to practice feedback. Accordingly, just a short time was necessary to give all members individualised feedback. This was also supported by another student, who believed that tutors had a better focus on student performance in small groups compared to larger groups. Despite these different thoughts and opinions regarding the effect of group size, all agreed that smaller grouping had a positive influence.

Mandatory feedback

Students from the first school indicated that providing peer feedback was mandatory every few sessions. They stated that this strategy, being obligatory, negatively influenced feedback authenticity:

> *'We do a lot of peer feedback frequently; every time there is a presentation, there must be peer feedback. So, I think that the students just become bored, every time repeating unhelpful feedback.' (Females, 4th group, 1st medical school)*

However, students from the fourth school mentioned that when peers were not asked to give feedback, they did not give any:

> *'…it is often that a peer does not give feedback until he is asked by the tutor..' (Males, 11th group, 4th medical school)*

The problem is that if peer feedback is mandatory, it will negatively influence authenticity, yet if it is optional, it may not be given at all. This makes the practice of PBL peer feedback a problematic issue.

Timing of feedback

Another important factor was the timing of feedback. Participants believed feedback given late caused negative experiences.

> *'Honestly, I received the feedback very late, after four or five sessions have gone. I asked her [the tutor] "Why did you give me a low grade?" She replied that "Because you missed this and this." Ok, why did she not tell me earlier!?' (Females, 6th group, 2nd medical school)*

Therefore, feedback needs to be given at a correct and suitable time, allowing students to improve their performance early.

Physical Location

Feedback could be received from either a tutor or peer within a group or privately. Almost all participants indicated that receiving negative peer feedback within a group and in front of a tutor had a negative effect, influencing the tutor's assessment of the student who received the feedback. Such

feedback highlighted poor performance in the PBL tutorial, causing students to avoid reporting negative issues about peer performance. The participants believed that this would make the peer feedback less authentic:

> *'The student is too worried to give his peer feedback, to avoid tutor assessment, so only positive feedback is given.' (Males, 3rd group, 1st medical school)*
>
> *……..*
>
> *'Some students become sensitive when they receive negative peer feedback. They perceive that the tutor would listen to that feedback and then give a low grade based on it.' (Females, 6th group, 2nd medical school)*

Regarding peer feedback, privacy was deemed important to facilitate authentic peer feedback:

> *'When you seek peer feedback in front of students, the peer will avoid embarrassing you [by being honest]; however, when you honestly seek that privately, he will not be worried [so, would give authentic feedback].' (Males, 9th group, 4th medical school)*

Tutor feedback was also considered embarrassing for the students if given in front of the group members:

> *'I honestly do not like to receive feedback in front of the group members. It is embarrassing for me.' (Males, 9th group, 4th medical school)*

For these reasons, some participants perceived that giving negative feedback in front of others caused defensive reactions, leading to arguments that there was nothing wrong with a given performance. According to participants, that negative reaction was a result of embarrassment felt by students:

> *'If it [the feedback] is given in the group, students will not accept it. And most students will be annoyed and be defensive against tutors' claims "Where is my problem!? Why is that wrong!? Are you sure!?"' (Males, 11th group, 4th medical school)*

Private feedback was also more preferred due to being presented in a suitable environment for dialogue and negotiation:

'Of course, the privacy [is more preferred] because of the opportunity for negotiation.' (Males, 11th group, 4th medical school)

Helping students gradually accept a negative feedback in front of peers, another student pointed out, made privacy more critical in the first year:

'In the first year, it is important that students receive feedback privately…because they are new to PBL.' (Males, 10th group, 4th medical school)

By contrast, another student perceived receiving feedback within a group as having benefits, helping listeners draw advantage from someone else's feedback:

'When a tutor gives a student feedback in front of us, all of us will get expertise.' (Females, 5th group, 1st medical school)

The public environment of feedback could also promote idea sharing:

'The group members have different opinions, but privacy is just limited to one opinion.' (Females, 4th group, 1st medical school)

Besides these positive outcomes, another student indicated that receiving feedback in a group promoted positive competition between group members:

'…you would ask why he [the tutor] gave my peer positive feedback but for me, a negative one. So the next time, you will try to do better...' (Males, 11th group, 4th medical school)

Therefore, student perceptions varied regarding which physical environment was better; however, they agreed that physical environment played a crucial role in the PBL feedback process. Although all points discussed in this section were important parts of the physical location, the most critical was the issue of peer feedback. When given within a group, there was a risk of false feedback being given to protect friends and peers from tutor assessment. Thus, this issue must be considered to develop PBL feedback practice.

6.4.5 Feedback Mode

In addition to the effect of the learning environment, the feedback mode (i.e., written or verbal) affects students' perceptions of the feedback itself. The feedback is also affected by whether it is individualised to a specific student or generalised to the whole group.

Verbal vs. Written Feedback

Different students received more verbal or more written feedback. Some students received only verbal feedback, while others received both forms. However, verbal feedback was received more than written feedback overall. In these focus groups, the participants discussed which mode they preferred, indicating the reasons for and factors behind their preferences.

Dialogue and negotiation

Students indicated that verbal feedback is better because of the opportunity for dialogue and negotiation it creates:

> *'In the written mode, she [the tutor] tells me the negative such and such. However, if she tells me that verbally, I would reply "Why?" and "Where exactly is my mistake?" Then she would answer that. After that, I would ask how to do better, then she would make suggestions.' (Females, 6th group, 2nd medical school)*

Verbal feedback helped the student to understand the feedback content further and also negotiate to achieve an agreement about the student's situation and further progress.

Clarity

As verbal feedback allowed for dialogue, verbal feedback was easier to understand than written:

> *'The verbal is easily understood. It is clearer...' (Males, 3rd group, 1st medical school)*

A student added that some written feedback was poorly handwritten:

> *'They are [the feedback modes] both preferred, but verbal is better because we cannot understand the tutor's handwriting.' (Females, 5th group, 1st medical school)*

Body language

A further factor associated with verbal feedback was the effect of body language on students' emotions:

'You would feel that [through the verbal feedback], eye contact makes you feel that the tutor is focusing on you, so you would feel a responsibility to do better.' (Females, 7th group, 3rd medical school)

……..

'In the verbal form, you would see the tutor's facial expressions, but in the written, you could not know if he is angry or not.' (Males, 9th group, 4th medical school)

Referencing and reflection

Although most students tended to prefer verbal feedback over written, some preferred the written mode because it could be kept as a reference and source for reflection:

'I think that the written is more beneficial because I can focus much better on the feedback and come back to it at any time . . . so, I can be sure that I applied well what was written, but in the verbal form, I may forget.' (Females, 6th group, 2nd medical school)

It can be concluded that the participants do not share one single preference. Although verbal feedback is generally more appreciated, receiving both forms creates a more comprehensive experience that combines the advantages of each mode:

'I believe that the best solution is that both modes should be given.' (Males, 2nd group, 1st medical school)

Individualised vs generalised feedback

Students also discussed whether feedback should be individualised to each student or generalised to the whole group's performance. Most students perceived that individual feedback was better, pointing out reasons for this.

Personal weaknesses

Most participants believed that individual feedback is essential for addressing a student's individual weaknesses:

'It [individualised feedback] tells me this is a weak point I have, and that is my strength, so I will be better aware about what I really need to improve..' (Females, 12th group, 4th medical school)

General feedback is not helpful to each individual student because it does not reflect each group member's performance:

'If there is a group of ten students having three excellent and seven poor members, the tutor would say e.g., "you are bad," so excellent students would perceive that they are bad, too.' (Males, 2nd group, 1st medical school)

Feedback as a motivator

Another reason given for individualised feedback being preferred, is that students feel targeted, so they are more motivated to change:

'When the tutor gives general feedback for all students and comments on a negative performance that may happen within the group, I would say that 'this tutor may target another student not me,' so I would not take it seriously.' (Males, 2nd group, 1st medical school)

A combination of verbal and written feedback was reported as the most helpful for the students. This was also true concerning a combination of individualised and generalised feedback:

'Having a mixed-mode of feedback is good. Not all feedback should be individualised… e.g., It would be good to encourage the whole group. if they are doing well, by giving a positive general feedback.' (Males, 10th group, 4th medical school)

General feedback is considered a good feedback mode if it is related to overall performance. However, it is important to have individualised feedback, too, to distinguish clearly between each individual's performances, as can be concluded from the students' perceptions.

These data suggests that no one mode of giving feedback is perfect, whether verbal vs. written or individual vs. general. The participants believe that a mix of these forms optimises the feedback process.

6.4.6 Feedback source

Students described another factor that influences the feedback process: the feedback source, peer or tutor. As explained at the beginning of this chapter, students from four different medical schools participated in the qualitative stage of this study. The first school was the only one with a systematic process for peer feedback and peer feedback was mandatory. Peer feedback tended to be optional in other medical schools. Still, most students said that they received feedback from both sources, with a minority receiving it from tutors only. Within the focus groups, students discussed which feedback source they preferred, indicating some advantages and disadvantages of each source. Some factors that make one source preferable over others have already been discussed above; however, they are considered here again in terms of feedback sources in particular.

Peer feedback

Sharing a similar level

Some participants perceived that peers have the advantage of sharing a similar level of expertise. For example, when students give a presentation, their peers are the best people to assess their skills. Because the peers are not experts, they would be able to judge how skilled a presenter is at explaining new knowledge. This quality cannot belong to tutors since they are usually experts on the presentation content:

> *'I think that peer is better; why? Because she is the one who receives new knowledge, so she could assess my skills in explaining something new. But the tutor is already an expert on that..' (Females, 6th group, 2nd medical school)*

Better awareness

Additionally, peers could be more aware of the student's situation and progress due to having more prolonged contact with the student than the tutor may have. Peers' familiarity with each other promotes more in-depth feedback:

'I prefer peer because sometimes she becomes a member in the same group for several years, so she can notice how I progress...' (Females, 4th group, 1st medical school)

……..

'The tutor sometimes cannot exactly understand what you mean, but a peer understands you much better because he is close to you.' (Males, 10th group, 4th medical school)

Tutor feedback

Authenticity

Most participants perceived peer feedback to be less authentic than tutor feedback. As explained earlier in this chapter, students risk sharing personal, subjective feedback among themselves unless they have a good relationship. Unfortunately, that close relationship does not always exist between students:

'…peers do not care to help to progress; it is a personal issue, i.e., if I [as a peer] like him, I will give positive feedback, and if we have a personal problem, I will not give him good feedback.' (Males, 1st group, 1st medical school)

In contrast, students indicated that tutor feedback is more objective and authentic:

'I prefer the tutor's feedback because he will not give you fake feedback..' (Females, 8th group, 3rd medical school)

Officiality

A group of students perceived that tutor feedback is better because tutors have the authority to teach, assess and grade students:

'The tutor's feedback is preferred because he is an official person, the one who is officially assigned to teach us.' (Females, 7th group, 3rd medical school)

Hierarchy

Another factor that made tutors the preferred source of feedback is the hierarchy between tutors and students. Tutors are more respected than peers:

> *'The academic position of the tutor is much higher than my peers, so I just ignore any comment from my peer because it is often for subjective reasons not to improve me.' (Females, 7th group, 3rd medical school)*

Expertise

Many students also noted that tutors' feedback is better because they are more expert:

> *'I prefer the tutor because he is more expert so that he can give in-depth feedback...' (Males, 9th group, 4th medical school)*

Multi-source feedback

Every source of feedback has its unique features, with some students indicating that feedback is best received by both, i.e., multi-source feedback. Multi-source feedback is more comprehensive, combining the advantages of each source:

> *'Both sources are important; regarding the tutor, he has better expertise…and a peer understands you much better...' (Males, 3rd group, 1st medical school)*

In conclusion, the participants in the focus group discussions debated many aspects of the feedback-giving process in PBL. The students believe that constructive feedback is an essential part of the PBL curriculum when the learner has a central role in the educational process. Furthermore, this study's analysis shows there is a gap between student expectations of the best feedback-giving practices and their real experience. The potential reasons for this are found in different themes; however, they are interrelated and could potentially influence each other. For instance, understanding feedback as a constructive tool is considered to be positive factors influencing the feedback process, and this is further controlled by other factors, such as culture and formative experience. It is important to consider these factors in developing the best practices for giving and receiving feedback. The next chapter describes the data from tutor interviews.

Chapter 7: Results – Interview Study

7.1 Introduction

This chapter describes the results of the qualitative data analysis from the semi-structured interviews with the tutors. As mentioned in the previous chapter, the student focus groups and tutor interviews were conducted to explore their experiences as a part of a qualitative interpretivist research framework. The tutor interviews were conducted to reach a triangulated understanding of the feedback experience of both stakeholders (students and tutors).

Eleven interviews were conducted, with six male and five female tutors. Gender balance was aimed for to correspond with the gender distribution of the student focus groups, which had an equitable gender split of 50% male and 50% female. The 11 interviews were conducted at four medical schools: four interviews at the first medical school, one at the second and three at each of the third and fourth (see Table 7.1).

Table 7.1 Interview participants

First school				Second school	Third school			Fourth school		
Male		Female		Female	Male		Female	Male		Female
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th

Three of the medical schools had similar systems, wherein the tutors facilitate the same gender only, i.e. a male tutor only facilitates a male PBL tutorial group. The third medical school had a different system, wherein tutors facilitate any gender.

The interview data was analysed in a similar way to the focus group data, by thematic analysis. As explained in the previous chapter of the focus groups analysis, the raw data was examined, and coding was created for each part of the transcript. Then, similar codes were grouped under representative themes.

Through this process, themes were identified that represented the tutors' perceptions regarding the feedback process in PBL. These themes will be described and supported by example quotes from the interviews.

Three main themes emerged: (1) tutor understanding of the feedback, (2) reality of the feedback process and (3) factors that influence the experience of the feedback process.

7.2 Tutors' Perceptions of Feedback

The first theme explores how the tutors defined and articulated feedback. This section will identify how feedback, as believed by tutors, plays an important function in the student learning process in PBL.

7.2.1 Feedback Definition

It was important to examine how tutors understand feedback. Many tutors had similar definitions of feedback, mainly describing it as an honest opinion on performance:

> *'I believe it should be an honest opinion, okay, about individual participant skills.' (Female tutor, 5th interviewee, 2nd medical school)*

It was also defined as a piece of advice:

> *'It is small advice or a guide that is given to students regarding how they are doing and what is expected of them.' (Female tutor, 11th interviewee, 4th medical school)*

One respondent expanded on this and defined feedback on a macro level. This was in the context of his feedback to policymakers concerning his experience in facilitating PBL groups. Accordingly, for this tutor, feedback was not defined as a comment or advice given to a student but as a message to policymakers to improve the PBL process:

> *'With this feedback, it will go to the policymaker, and the policymaker will decide what improvements can be made for future students. They can improve the existing system more.' (Male tutor, 1st interviewee, 1st medical school)*

Thus, feedback was defined in different ways by the tutors. However, these definitions converge on the point that feedback is used to improve student performance. This can take place on a micro or macro level. The former involves giving students information about their performance, whereas the latter involves improving the system in which students learn.

7.2.2 Importance of Feedback

Tutors explained how feedback is crucial in the PBL curriculum, with one respondent stating improvement is impossible without feedback:

'If a student has not done very well in one field, and you don't give feedback appropriately, the student will not develop and will not know the areas to improve on.' (Female tutor, 4th interviewee, 1st medical school)

Furthermore, formative feedback was identified as crucial for the later summative assessment:

'Feedback is one of the pillars of the improvement plan for the students; from case one, which will enhance them to improve for the next case, and to improve in order to achieve a good mark during the summative exams within mid-block or the end. I think without that, a student will be unaware, and he will not know about his performance. He will be shocked about his performance at the end block exam.' (Male tutor, 10th interviewee, 4th medical school)

Interviewees also opined that building and constructing student skills based on feedback is crucial for a student-centred learning environment, such as PBL:

'There are a lot of skills that we facilitate in PBL, which are based on student-centred education, as you know. Because of that, we focus on the feedback.' (Male tutor, 2nd interviewee, 1st medical school)

'It is kind of motivating; it is important especially from the first year … It is totally student-dependent, student-centred learning. They have leadership; they are a leader.' (Male tutor, 10th interviewee, 4th medical school)

More specifically, the PBL environment requires active learning, and some tutors suggested that feedback is a crucial tool in supporting and guiding students in developing active learning skills:

'The aim of the PBL session is to have an interactive discussion, and, by the feedback, we highlight what students are good at and what they need to be [better at] to have a more active group.' (Male tutor, 2nd interviewee, 1st medical school)

Moreover, tutors suggested that feedback is vital for developing both research skills in PBL as well as interpersonal skills:

'It [the feedback] really encourages research development. It really prepares their personality to face the future and deal with other people in the medical

field, to be a member of a team, so they learn how to work with each other.'
(Female tutor, 8th interviewee, 3rd medical school)

Therefore, feedback is an active tool that facilitates student learning. The main philosophy of PBL is to develop self-regulated learning skills, and feedback has an important role in supporting this. In PBL, students need to be active and develop important skills, such as independent learning and research. In addition, they are formatively assessed to prepare them for summative assessment. Since PBL is a student-centred learning environment, student interpersonal skills are an important part of the education process. Tutors revealed that feedback plays a crucial role in developing these PBL requirements.

7.3 Reality

In addition to exploring how tutors conceptualise feedback, the second theme identified how they experience and communicate the different purposes of feedback. This is important with respect to understanding their viewpoints and triangulating with the student data.

7.3.1 Tutor-Driven Feedback

From the tutor experiences, the first subtheme considers whether feedback is tutor or student directed.

Some tutors reported providing immediate feedback as soon as a student needs to be guided or corrected, regardless of whether the student has expressed interest in receiving feedback:

'… before they [the students] ask me [to give feedback], if I noticed anything, I love to give them feedback on the spot directly. After every session, I like to give feedback.' (Female tutor, 8th interviewee, 3rd medical school)

……..

'If a student, for example, doesn't give the others in the tutorial the opportunity to talk, he's a dominant student. I take care of this [in] that the feedback must be given immediately. At the educational level, [if] the students I see … didn't do well today, then I let [them know] at the end of the tutorial.' (Male tutor, 10th interviewee, 4th medical school)

In contrast, other tutors only provide marks in an assessment sheet without any detailed feedback. In scenario, students receive an assessment sheet with scores for each required skill, such as answering audience questions, and students can then reflect on these marks:

> *'In the feedback, in the PBL, there is a specific format [for assessment]. Whether their presentation was good, whether their eye contact was good [as criteria for assessment] … if they [the presenter] answer the [audience] questions, whether it is easy to understand, all these subheadings we are marking … We give them total marks, and, after giving the marks, [the] students will reflect further so they will understand where they [went] wrong [and] why.' (Male tutor, 1st interview, 1st medical school)*

It was also reported that tutors are not asked by the curriculum committee (i.e. the policymakers) to give feedback until students receive their grades at the fourth session, unless students specifically request feedback. The participant believed that, when additional feedback explaining student performance is left to the student to request, students will not always take the opportunity and will be heavily driven by assessment scores:

> *'The committee says that "after session four, give students the feedback [and] they can come to you if they find that their marks are reduced to discuss it." Definitely, if someone receives full marks, she will not come to discuss this with you.' (Female tutor, 5th interviewee, 2nd medical school)*

Although tutors are not required to give feedback until later, they have the choice of providing feedback if they wish. This is a tutor-directed feedback process:

> *'They [the committee] gave us this order to make it easy for us, but if you [as a tutor] want to take one step more and try for yourself and are motivated to give feedback for your students, it is fine, no problem.' (Female tutor, 5th interviewee, 2nd medical school)*

Therefore, the feedback experience is mostly tutor driven. Indeed, some tutors are internally motivated to give additional detailed feedback and whilst others choose to assess students and provide scores. In such circumstances, students may not initiate the feedback process and, consequently, are left without any explanations about their performance.

7.3.2 Quality

The tutors were asked about detailed feedback, specifically how they communicate the different purposes of feedback (see Table 5.4, page 98). As explained in the previous chapter, it is important to describe the purposes of feedback alongside quality as they affect each other.

Telling students about strengths and weaknesses

Participants reported that feedback should be specific so that students are aware of the positive and negative aspects of their work:

> *'It should be specific when you give student feedback to help them identify exactly what is expected of them in the future … Let's say that one student … [had] four good performances and one bad performance. If you tell the student that he is generally good, he will not improve the bad thing, unless you specify it.' (Male tutor, 6th interviewee, 3rd medical school)*

One participant indicated that students should know both the positives and weaknesses of their performance, and she specifically pointed out that telling students what went well is an important part of feedback:

> *'No, [we should] not just take one [being limited to negative feedback only]. It helps them to improve [by pointing to the positive performance], and it helps to encourage.' (Female tutor, 4th interviewee, 1st medical school)*

Another tutor added that telling students what is good about their performance has positive outcomes for student self-confidence; helping students to positively interpret the feedback and use it constructively, instead of interpreting it as 'only criticism'.:

> *'I prefer to tell the positive side in such a performance: "You are doing well, [even] perfect." This will be an encouragement and will support self-confidence. This will allow a student to interpret the feedback much better because the student thinks that feedback is criticism.' (Female tutor, 11th interviewee, 4th medical school)*

For this reason, participants reported that they prefer to give the positive feedback first when giving feedback. Focusing on the positives makes students more open to any aspects that may be perceived

as negative by the student:

> *'… it will make the student's ears more open to you if, "Oh, he sees the good part in me. He's not seeing only the negative part. He's seeing also good things".' (Male tutor, 9th interviewee, 4th medical school)*

However, it was evident from the data that focusing only on the positives in students performance is not sufficient in feedback practice, as this quote highlights:

> *'Because if you just focus on the positive things, the negative will stay there; they will not be improved upon. You need to direct student attention to the negative, too … Both should be included: positive to be increased, and negative to be decreased. Only one is not enough.' (Female tutor, 5th interviewee, 2nd medical school)*

Furthermore, it was suggested that negative feedback requires follow-up tutoring to monitor students development:

> *'… we should mention what needs to be done better. After that, we follow up this development during the year. The result of such development could be … immediate consequences or long-term consequences that we can observe in the student.' (Male tutor, 2nd interviewee, 1st medical school)*

Therefore, the positive and the negative aspects of student performance are highlighted by tutors. In essence, positive feedback is important for student confidence and interpretation of the feedback experience, whereas negative feedback can correct/improve the poor aspects of student performance. Follow up was considered as a further step to examine how a student is developing.

Telling students why their performance was good or poor

A further purpose of feedback was identified as telling students why a given performance was good or needed to improve. This ensures that students understand the reasons behind the feedback and was considered important:

> *'This is the most important part. So, when I tell [a] student that "your performance in the presentation is weak", [the] first thing she would ask [is] why. So, I tell her that she needs to improve her language, and her slide should be technically developed: "You should develop presentation skills by*

developing language skills, you do not use scientific language".' (Female tutor, 11th interviewee, 4th medical school)

In the above quote, the tutor told the student that they did not have sufficient presentation skills; furthermore, she justified this claim by explaining that the student lacked scientific language skills.

This was expanded upon with regard to a student performing well and how students who excel use resources that are more advanced than textbooks when preparing oral presentations. One tutor believed that it is not sufficient tell a student when a performance is good; they must explain why:

'We have some students who go beyond the textbook; they will go to [the] WHO's website … When they finish [the presentation], I will say, "You see that slide? It was not in your textbook. It was in CDC Centre." Then I will say, "That is excellent information." We have to mention it like that. Otherwise, they will not know what is excellent [or] why. You cannot just say excellent all over. You have to point [it out].' (Female tutor, 4th interviewee, 1st medical school)

Participants confirmed that the students need to know what is expected of them by explaining and making criteria clear. In addition, this feedback element is more considered for female students as they were reported to be sensitive to negative feedback:

'Therefore, in the feedback, we need to give students standards and criteria … [to ensure the] students [are] aware of what we expect from them. For example, if I tell [a] student that … [her] voice is low, I should explain to her what a low voice means because she may take it sensitively, especially as a female. I should say that the voice is low [and] that I cannot hear it. I want to her to raise it up to this specific level, so now I set [the] standard, and the student can understand what I expect from her.' (Female tutor, 8th interviewee, 3rd medical school)

Hence, according to this tutor, this feedback element is not just for criteria awareness. Rather, it helps students accept negative feedback.

Telling students how to improve

A further purpose of feedback was described which involved informing students of how they can improve their work. Participants indicated that students cannot benefit from feedback unless

suggestions are provided regarding how to do better:

> *'It is very important [to tell a student how to do better] because if you do not give a student steps now, how [will] the student … benefit?! You must provide some steps, so that he can adopt to avoid making the same mistake. If we tell a student what it is wrong without giving him an alternative, how can he develop?' (Male tutor, 2nd interviewee, 1st medical school)*

In addition, when telling students what is wrong but also offering solutions helps them to be more accepting of negative feedback:

> *'If I tell a person that … [their] performance is not good, at their age, they will think about solutions. But, it might not be the right one; okay, they may take it personally and start to make excuses. However, if you tell them the problem and say, "I am just wanting you to participate more, I want to see you talk and ask questions, I want you to talk to your friend." Here, the beautiful thing is that you tell them what is wrong and … what you expect from them. They will think and say this [is] what [the] tutor assessed me on, and I now have the solution to correct my problem.' (Female tutor, 5th interviewee, 2nd medical school)*

On the other hand, some tutors reported that this element of feedback should be self-regulated and self-reflective. Some tutors believe it is better for students to find a way to develop and improve by themselves, as the students will be internally convinced that this is the best way for them to develop:

> *'I often tell the student what did not go well in their performance, but I leave this element [i.e. how to improve] to them. I give them the freedom to think about how to solve such a problem by themselves. If I tell them how to do better, they will not think and brainstorm, and they will apply my steps. Later on, they could come back without any progress because they were not internally convinced and motivated.' (Female tutor, 11th interviewee, 4th medical school)*

> *'I let them make a plan actually. I don't give them [the solution] myself. I leave them to think about how to improve. I tell them, "This is what I have observed, and now you have to come up with the solution." I should not write down the solution for them … because everybody will choose the things that fit them, to their personalities and to their situations.' (Male tutor, 10th interviewee,*

4th medical school)

It was suggested that, by making this feedback element a self-regulated process, the student can develop vital reflection skills. Furthermore, planning how to do better should be self-regulated; however, one tutor stated that he guides students in their self-regulated planning. This tutor first gives the student the opportunity to develop a self-regulated approach, then provides further advice when required:

> *'E.g. today, in this tutorial, I come to him [and say], "You better do this"; he comes next time [and says], "Doctor, I have tried. I could not perform well [and I] still have the problem." Then the second step is "Okay. Come. Let [us] sit together. What is your problem? How are you preparing? Where are you studying? How are you studying?" Sometimes they need a guide.' (Male tutor, 10th interviewee, 4th medical school)*

It is evident that tutors have a similar belief that this feedback element is crucial for students to develop, but they have different approaches to providing advice. Some provide detailed feedback to the students, while others leave time for student self-reflection. The latter strategy is important for developing self-regulated learning skills.

Telling students why improvement is important

Most tutors believed that students development is motivated by their grade and a desire to improve this:

> *'It is important for confidence. It is important for the score, because it is important for the assessment.' (Male tutor, 7th interviewee, 3rd medical school)*

Other participants confirmed this view; however, also expanded that the tutor can encourage the student to view the purpose of feedback as being of more value than just improving grades:

> *'Now, on the student level, it is more [focused] on the grades and performance in college. You could go further because these are medical students. "If you did not do this well, what would happen to your patient in the future?"' (Male tutor, 9th interviewee, 4th medical school)*

Thus, instead of only motivating students to attain a high grade, this tutor considers the future context of relevant situations that students might face.

Giving students feedback about interpersonal aspects

Feedback also contains interpersonal aspects, both positive and negative. One tutor indicated that feedback can help address poor performances attributed to personal reasons. Some students, for instance, do not participate because of shyness:

> *'Later on, I discovered that they [shy students] do not have sufficient language skills, and they are shy to speak [and want] to avoid being embarrassed by group members laughing [at them]. So, then I give feedback about this issue [to speak freely without fear] to the whole group in the PBL tutorial.' (Female tutor, 11th interviewee, 4th school)*

Other tutors carefully treat this feedback element:

> *'If you start to give them negative personal feedback, they become so aggressive … You cannot give them [the students] negative feedback about their own personality, especially in the medical field. It will not be easy to give students negative feedback. If you plan to give negative personal feedback, it should be based on criteria [to protect you].' (Female tutor, 5th interviewee, 2nd medical school)*

One participant frames feedback about areas to improve upon by providing positive comments regarding the student's personal aspects and then she gives negative personal feedback:

> *'[For a] quiet student, I do not tell them that … [they] are quiet, but [I] would say "You are so clever; I want you to speak more."' (Female tutor, 5th interviewee, 2nd medical school)*

Other reported that they may only give this feedback privately; others, not at all.

Overall, there is consensus in the data that feedback should be qualified, with an explanation of why, for it to be an effective tool. For students, it should reveal what is good and what can be improved in their performance. However, there is a lack of consensus regarding whether feedback should signpost the student on how to achieve the recommended change, as some tutors believe that it is a student-regulated process. Furthermore, the relationships tutors build with their students can affect the

tutors' feedback, and this can result in tutors being sensitive to their students' personalities.

7.4 Factors Influencing the Feedback Process

As a result of the similarity between the questions in the student focus groups and tutor interviews, the themes that emerged were also similar. These included: relationship; culture; the credibility of the feedback giver and receiver; the learning environment; feedback mode; and feedback sources.

7.4.1 Relationship and Culture

Gender

One of the factors that emerged within this theme that can influence the feedback process is gender. As described earlier, four medical schools were involved in this project, only one of which (the third medical school) permits its tutors to facilitate PBL tutorials for both genders face to face. Thus, it was helpful to explore whether student gender is an influential factor.

A male tutor in the third medical school indicated that there are gender differences with regard to engagement with feedback. Based on his observation, female students care and tend to have more self-insight than the male students, so they seek feedback more often than males:

> *'I believe that, based on my understanding of the psychological differences between males and females, females listen to the feedback better than males. So, I mean that, when you give them feedback [the females], they care much more than [the] males [with respect] to know[ing] … their weaknesses, whereas males do not.' (Male tutor, 6th interviewee, 3rd medical school)*

Whilst this tutor observed the difference between the two genders, he later mentioned that this gender difference could be attributed to his response to female students:

> *'Honestly, you can care much more for the other gender. [The care for female students] can be seen [by students due to] my body language, and they can sense how I care for them, so they seek more and tend to know more about their strengths and weaknesses.' (Male tutor, 6th interviewee, 3rd medical*

school)

Hence, according to this participant, there are two possible reasons for the gender difference: female feedback seeking behaviour, and tutor interaction and more caring response to female students.

Regarding peer feedback, this tutor indicated that gender is an influencing factor, suggesting that female peers tend to give more negative feedback than males, which he attributed to female students being more competitive:

> *'I do not know, but it could be that a female student would like to be better than her peers … There is a clear point in my mind that the competition between female students is more than males, and this is an influence.' (Male tutor, 6th interviewee, 3rd medical school)*

He expanded, adding that female students might be more competitive and thus aim to be better than their peers; accordingly, they might be more likely to focus on negative peer performance, more so than males.

However, another male participant in the same school disagreed, stating:

> *'I don't see any difference. It depends on the cohort of the group … [that] you … have. Sometimes you have very good students, a mix of good students. Sometimes there is a mix; students are a blend of good and average.' (Male tutor, 7th interviewee, 3rd medical school)*

Therefore, there was no consensus regarding the influence of gender on student attitudes toward the feedback process. However, since one believes that gender is an influencing factor, it should be considered as such during further development.

Relationship

Participants believe that a good relationship positively influences the feedback process. Data indicated that students might ignore feedback if it is given by a tutor they dislike:

> *'A student might not like this tutor, so [they will] just ignore his feedback.' (Male tutor, 6th interviewee, 3rd medical school)*

Regarding peer feedback, participant indicated that a good friendship resulted in the feedback being welcomed:

'If the friend [as a peer] feels comfortable, if they are good friends, then if the friend asks, "How would you judge my performance?" then maybe they will give their individual feedback.' (Male tutor, 7th interviewee, 3rd medical school)

Participant expanded, stating that if the group members have the correct understanding of the PBL tutorial group philosophy, that there is no competition, then a friendly atmosphere will be created for the purpose of peer feedback:

'Although there is no competition among us, there is one intention, one purpose, one aim among us. We want to improve performance. If that relationship between the students has built up, then it will help them.' (Male tutor, 7th interviewee, 3rd medical school)

Another factor identified as influencing the relationship between tutor and student is confidence and trust. One tutor described that he aims to build confidence and trust between him and his students, as in his view this will positively influence how the students respond to feedback:

'First thing, I develop a relationship of confidence with the student: "My aim is not to degrade you. My aim is to help you." Then the student really will welcome my feedback.' (Male tutor, 7th interviewee, 3rd medical school)

Suggesting that, a positive relationship creates an environment that supports effective feedback.

7.4.2 Credibility and Capability of Giver and Receiver

Awareness of student status

Participants identified a number of factors that can influence the credibility and capability of the giver and receiver within this theme. Regarding the feedback giver, data indicated that being aware of the situation of each student was important when giving effective feedback; by analysing the student's level of performance resulted in being able to give specific feedback, so the student benefits, as demonstrated in the following quotes:

'During the PBL session, when they are participating, I take notes on what they are saying in session one. I take notes on what they are saying in session

two. Then I know the names of my members, and I know how they are contributing to the group discussion and how prepared they are for that particular objective. Based on that, I just give feedback.' (Male tutor, 7th interviewee, 3rd medical school)

'If the problem comes from her interpersonal skills, we try to encourage her; if the problem [comes] from elsewhere, we try to guide her. Within two weeks, you can develop such a relationship with [the] student. You would know every student's background and level and to what extent you can push them, and sometimes you feel that you become [an] expert [with respect] to know[ing] what this student can do [and cannot do] …' (Female tutor, 8th interviewee, 3rd medical school)

Participants further expanded on this; one tutor described how she avoids forming initial impressions about students until she is much more aware of their capabilities:

'I do not directly form an impression about the student right away. I have to observe the student for several sessions.' (Female tutor, 8th interviewee, 3rd medical school)

In addition, she stated that she considers the emotional needs of the students, especially for second- and third-year medical students:

'Emotionally, especially students in second and third year, they really need support; they need any kind of emotional support to keep [going]. They are really under pressure. The study and exams and medical school are not easy.' (Female tutor, 8th interviewee, 3rd medical school)

It was evident from the data that it is important to gain understanding of the students' performance so they can diagnose problems with their work. This ensures that the tutors are able to give effective feedback, whilst being sensitive to students' needs.

Skills in communicating feedback

A further subtheme that can enhance the credibility of tutors relates to feedback skills. Many tutors commented that feedback should be provided in a positive way. They prefer to tell students what is good about their work first, and then they explain the negative issues, known as the sandwich method

(Sarkany and Deitte, 2017), they believe this helps the students to accept the feedback:

> *'When the student gives a presentation, I always focus on the positive things, [and] then I tell him what he needs to do better.' (Male tutor, 2nd interviewee, 1st medical school)*

> *'I prefer the sandwich method, and I believe that this method is easy to do and to be accepted. Why? Because she would feel that she is not too bad and she is doing well, but some areas need improvement.' (Female tutor, 11th interviewee, 4th medical school)*

Other described how they choose to use positive and supportive words:

> *'So, when I write, I write "Dear first-year doctors". What we believe is that it is a kind of encouragement.' (Male tutor, 10th interviewee, 4th medical school)*

In addition, others expanded further with regard to word choice and described involving some words that prove or support their claim when giving a negative feedback such as "I have seen you" …:

> *'I concentrate and pose what I have seen and heard, not I think… It is a proof for the student and evidence that oh, "this behaviour happened". It's not like "the doctor is [just] thinking [or claiming]" ... No, it is an evidence "I hear, or I saw".' (Male tutor, 9th interviewee, 4th medical school)*

In light of this data, it is evident that tutors are purposeful and selective in the feedback they provide.

Awareness of the assessment criteria for feedback

To be a credible feedback giver in the PBL context, awareness should be developed about the criteria used to assess student performances, as described here:

> *'If the student is activating prior knowledge, which is the rationale of PBL, if the student is using brainstorming about that concept and asking all WH questions [i.e. Who, Where, When, etc] related to that, [such as] why, how, where, when [and] what. If the student is not doing that, it means the student is not participating in the discussion and is not going to the depth we want him or her to go. This is important.' (Male tutor, 7th interviewee, 3rd medical school)*

Furthermore, participants added that peers should also be aware of these criteria when giving feedback:

> *'If the students are aware, they know the process, they know the rationale of PBL, [and] then it becomes easier for them to give feedback.' (Male tutor, 7th interviewee, 3rd medical school)*

Readiness to receive feedback

In addition to the feedback giver's capability, the receiver's capacity to receive is another influencing factor identified within this theme. Some students were described as being not ready with respect to receiving negative feedback, which means that the feedback process is often difficult:

> *'They are so sensitive. They become upset and take it so seriously, and they believe it, so it is difficult to give them feedback and difficult to cut a mark.' (Female tutor, 5th interviewee, 2nd medical school)*

Other expanded and reported that some students do not improve their performance because they are offended by the feedback and cannot take it constructively:

> *'It depends on the student's perception and personality, the way they take it. Sometimes students are receptive because they're open to feedback; we have to evaluate, also, are they open or not? Some students are not open to the feedback, and they don't take it in an easy way.' (Female tutor, 3rd interviewee, 1st medical school)*

Maturity

A related subtheme influencing the capability of the feedback receiver is being mature enough to interpret and engage feedback positively. Students who are actively engaged in student-centred learning and self-regulation are more receptive to feedback than students who are not. One participant stated that, according to her experience, there are two student types: believers of teacher-centred education and believers of student-centred education. This tutor believes that the latter group accepts feedback more positively than the former. She attributed this difference to the fact that students in the teacher-centred group believe that the tutor is the only source of knowledge, and,

accordingly, they are passive. Hence, when the tutor gives feedback, it will be received as a final judgement on their competence. However, students in the student-centred group believe that they are the centre of education, and external tutor feedback is just a constructive guide.

Other expanded, describing that second-year students are more receptive to feedback than first-year students. For the latter, feedback is only required for negative behaviour and weaknesses; this was attributed to self-regulated learning, which is to say that self-regulated students are more receptive to feedback than non-self-regulated students:

> *'What I have noticed … of students in the first year, actually, [is] that they go on the defensive immediately. They want to defend their point: "It is too much today. I didn't sleep well. Everybody was talking, and I couldn't say my point. I knew the information, but everybody was talking, so I kept quiet." They are going to defend their behaviour. When they enter the second year, actually, they learn the process; they know how to receive feedback and [how] to use that feedback in a positive manner to improve their behaviour.' (Male tutor, 9th interviewee, 4th medical school)*

Participants described some students wanting to understand their weaknesses so they can change, and these students actively seek feedback instead of relying on the tutor:

> *'There are some students [who] care and ask "How did you see me, doctor? Give me feedback. Am I good or bad?"' (Female tutor, 11th interviewee, 4th medical school)*

Therefore, this suggests that when students grow and learn in a student-centred environment, their self-regulated approach to learning develops, which in turn positively influences the acceptance of, and response to, feedback.

Motivated to change

Motivation to change was described, and included students who do not listen to accept the recommendations of the tutor, which hinders their development:

> *'Some of the students, you give them feedback, "did they implement the corrections or so?" Next time, you find that they didn't accept what was recommended.' (Female tutor, 4th interviewee, 1st medical school)*

Overall, in this theme, self-regulation is central. Students who engage in the student-centred education philosophy are mature enough to positively interpret the feedback given to them, and, as such, they also often seek feedback. With regard to accepting feedback, their needs to be alignment with their own identified areas of weakness.

The issue of self-regulation is further described in the next section, which concerns the learning environment.

7.4.3. Learning Environment

The educational system

In addition to the fact that students, as receivers, are influenced by the educational system, the entire practice of feedback is also influenced by the educational system in which it takes place. Contrasts were made between the traditional system and PBL and how the PBL educational system influences the practice of feedback, feedback is an essential part of the PBL curriculum, as well as a focus on developing self-regulated learning skills, such as reflection:

> *'In traditional [education], you don't introduce these things [the feedback processes]. These are things [the feedback processes are] related to in medical education, but, in traditional medical education, [feedback] is not introduced so much into our system [in her former school], [either] in the teaching system [or the] learning system. In [the] PBL system [in her current Saudi medical school],… these things [feedback process] are part of the curriculum. The reflections, the feedback, they're part of the curriculum, they're part of the system, they're part of the PBL.' (Female tutor, 3rd interviewee, 1st medical school)*

Participants highlighted that students should be educated further about feedback, as developing a good learning environment was considered important with respect to convincing students of the importance of feedback, specifically of its constructive nature for learning:

> *'In the PBL [system], it is very important that the student is aware of the benefits of feedback and how it should be used, because it is critical in encouraging the students to practise it. They must know how it is important;*

otherwise, they will perceive it as just criticism.' (Male tutor, 2nd interviewee, 1st medical school)

Accordingly, tutors believe that feedback is an important aspect of the PBL learning environment. As receivers of feedback, students should be educated about the feedback process and its vital role in the PBL journey.

Formative experience

The formative experiences of students were identified by participants as an influencing factor in the PBL experience. Students often face challenges in the new learning environment, such as being active learners in small discussion groups, as described here:

'… in medical school, they encounter new strategies by having discussions in small groups and being central to the education. Honestly, it is very challenging, very challenging.' (Female tutor, 5th interviewee, 2nd medical school)

Another tutor pointed out that students were not accustomed to receiving negative feedback/criticism prior to entering medical school:

'They are not open to the feedback … because of their personalities, maybe because of the way they're brought up, maybe their parents have not told them their weaknesses. They [the parents] appreciate them [the students] all the time and ignore this [the negative feedback].' (Female tutor, 3rd interviewee, 1st medical school)

Speciality of tutor

When discussing expertise and whether expertise influences the feedback process, one participant stated that her feedback is limited by the performance of students within the PBL tutorial, as she is less able to comment on the knowledge aspects. However, if the problem at hand is within her expertise, then she is able to guide her students by asking them to read further if they have missed important information:

'When I give feedback, I focus on the students' performance, okay? However,

if the case study is about my speciality, I will guide them, e.g. "Girls, is your discussion enough?" I will ask them if they missed some information … So, I will ask them to read further about this point.' (Female tutor, 11th interviewee, 4th medical school)

This highlights that tutor speciality could influence the feedback process.

Model in giving feedback

Participants stated that feedback rules should be followed by the tutors because they as tutors should be good role models for students in providing appropriate feedback:

'I believe that tutors must respect the feedback rules because there will be feedback in every session. We should be a good [role] model for students.' (Male tutor, 6th interviewee, 3rd medical school)

Physical place

A further subtheme relating to the learning environment is whether the feedback is given in private or in front of other group members. Tutors reported different perceptions and experiences regarding this point. One tutor indicated that it depends what students prefer:

'Some of the students don't want their feedback [given to them] in front of the other students. Some of the students … want [their] feedback [to be given] in front of the students. Taking into consideration the whims and wishes of the students, we have to cater to the needs. Then, if they don't want feedback in front of the students, I'll give them feedback separately.' (Male tutor, 7th interviewee, 3rd medical school)

However, other participants reported giving general public feedback to group members as well as private feedback to individuals:

'Yes, "so this learning outcome is not covered well", so this is a common message [feedback] to all the group. "You have to go back and read more about this learning outcome." The other feedback that we have is personal feedback; e.g. I have one student [and] I cannot point [out] this student during sessions, like "All of you prepared but Mohammed did not"… this is a kind of

discrimination and causes depression and [does] not [result in] improvement at all. So separate verbal feedback you could give to students.' (Male tutor, 10th interviewee, 4th medical school)

In contrast, another tutor always provides feedback in front of others:

'We have seen some students who will say, "Please, if you will give me my feedback privately." I say, "No, it's group work; we cannot give feedback privately."' (Female tutor, 4th interviewee, 1st medical school)

She justified this practice by indicating that it promotes multi-source feedback. In this instance, everyone (i.e. tutor and peers) in the classroom provides feedback:

'We don't do one to one [private]. Sometimes it's 360-degree feedback. We try to get the students to work in group[s] ... If we do the one to one, I don't think it will be as effective.' (Female tutor, 4th interviewee, 1st medical school)

Group feedback was considered to have an advantage in that the group members also obtain benefits by listening to the feedback provided to others:

'It encourages others, too, to see what she has done that is different from what they are doing so that they can try.' (Female tutor, 4th interviewee, 1st medical school)

'E.g. if one student missed some points, I tell her in front of others because they may … benefit from that feedback, too' (Female tutor, 5th interviewee, 2nd medical school)

In summary, the learning environment is an influencing factor in the feedback process. The PBL environment in particular is different from the more traditional system and is new for both peers and tutors, especially with respect to addressing feedback. Tutors were educated in traditional schools, and the students have come from secondary school where feedback is not practised. In addition, the speciality of the tutor can influence the feedback process. These environmental factors are important and should be considered to ensure the proper practice of feedback in a PBL context.

7.4.4. Feedback Mode

Feedback mode is an important part of this research. In the interviews, participants were asked about

their current experiences, specifically about how they prefer to give feedback and how this influences the feedback process. This theme is further divided to two sub-themes: verbal face-to-face feedback vs. written feedback and individualised vs. generalised feedback.

Verbal vs. written feedback

The tutors expressed varied experiences in giving students verbal and written feedback. However, it was apparent that verbal feedback is the most widely used for informal situations, such as within the sessions, whereas written feedback is often used for formal assessment, such as an assessment at the end of a semester, or given for serious misbehaviour that requires documented feedback:

> *'When it is formal, then it has to be when you're asked for it … You write feedback. [For] informal feedback, you meet with your students, and then you give feedback [verbally], and [the] peers give feedback. That is informal. You're chatting, and you're discussing, and you're doing that. That is the informal feedback.' (Male tutor, 7th interviewee, 3rd medical school)*

> *…….*

> *'We give both of them. If it is a usual routine [of] feedback in the tutorial, we give that actually as a verbal one – verbal, which is face to face. You can talk as much as possible … If a situation like a critical incident is happening, then it must be a written one and documented for the student for the next time: "Okay, this is very strong feedback on a level of a critical incident that I should not do again otherwise it will influence my GPA."' (Male tutor, 9th interviewee, 4th medical school)*

The tutors discussed the feedback form they prefer and their reasons for said preference. Some tutors pointed out that verbal feedback is preferred for a number of reasons. For instance, emotional body language can be more easily expressed in verbal form than in written form. In addition, using the native Arabic language in the verbal form makes the feedback process much easier for the students than the English written form; as described in these quotes:

> *'Written feedback is very objective, very direct. Language can be misunderstood, especially when we use English in feedback [in the written form]. You know, we are second language speakers; we always have a problem in communication in English, in both understanding and telling the*

information … that [giving feedback in English] is strict and rude, and without emotion. Sometimes you want to be soft with people; you want them to learn, but in face-to-face feedback, there is body and face language, tone of voice and native Arabic language, and, while you give the feedback, you find the questions and the impression of the students in front of you, so, if you find the student conscious, scared, you [can] save the situation.' (Female tutor, 5th interviewee, 2nd medical school)

Verbal face-to-face feedback was also described as the preference when dialogue is of importance to aid learning:

'If I send feedback as a written [document], it will be taken seriously and formally and there will be no further reply from [the] student, so there will be no discussion. However, in verbal feedback, the student listens carefully and can ask [questions] immediately and get answers on any unclear point.' (Female tutor, 11th interviewee, 4th medical school)

Alternatively, written feedback was identified as being useful as a formal record:

'Verbally, it is effective, but when it … [is] written and documented, the students say "Okay, this is documented. I can't escape from that." I need the student sign on that.' (Male tutor, 9th interviewee, 4th medical school)

In contrast, one tutor indicated no preference; rather, the preferred form is dependent on the student's preference:

'I don't see any preference. The preference, it changes from a student's perspective.' (Male tutor, 7th interviewee, 3rd medical school)

Individualised vs. generalised feedback

This subtheme explored whether the feedback is generalised for the entire group or individualised for each student. One tutor indicated that both forms are important, and both are given to the students.

'I give general feedback to the whole group on how they were dynamic, interactive and participative, etc. This is about the group feedback; however, individual feedback is important, too, because everyone has his own weaknesses and strengths.' (Male tutor, 2nd interviewee, 1st medical school)

Another tutor confirmed this view of how individual feedback is crucial for individual needs:

> *'If you tell [them] that a group performance was good. Let's say there are nine members, are they all good? Or most of them? So, this feedback is not reflecting every individual, [and] some of them could not be good.' (Male tutor, 6th interviewee, 3rd medical school)*

Therefore, based on these data, tutors believe that both modes are necessary, and the mode to be used depends on the context.

7.4.5. Feedback Sources

The tutors were asked about their experiences of feedback sources within the feedback process. This included feedback from tutors and group members. The interviews focused on the perceived advantages and disadvantages of each source.

Generally, for all four medical schools, feedback is provided by tutors; however, they have different experiences regarding peer feedback. The second and third schools do not have any peer feedback, and feedback is mostly formal for the first school where students are asked to give feedback and assessed on how they give it and informal approach for the fourth school.

Tutor feedback

One tutor described that she has the advantage of being able to observe all student performances. She called this advantage 'eagle eye', and she believes that it helps in making comparisons between different student with regard to competences. This is something the peers lack:

> *'According to the advantages of [the] tutor, you will be the eagle eye and will see all of them, okay, and will make a comparison between this and that. After that, you will be able to measure [the] level of students with their peers.' (Female tutor, 5th interviewee, 2nd medical school)*

In addition, participants described that students value the feedback of tutors more than peer feedback, as peers might interpret feedback personally and subjectively:

> *'According to the emotional response, as a tutor, [the] student will accept it without perceiving it as a personal feedback or "envy", so it will be honest feedback [i.e. authentic feedback].' (Female tutor, 5th interviewee, 2nd*

medical school)

Moreover, tutor feedback is based on guidelines, which is to say it is criteria orientated, and, by using guidelines, all students can be assessed in the same objective way:

> *'Another advantage is that we have a guideline, and we know what we are talking about, so we have standardisation, and it is good that all students follow the same standardisation regarding the evaluation.' (Female tutor, 5th interviewee, 2nd medical school)*

Tutors also indicated that they have more expertise than the peers, which is an advantage:

> *'The facilitator knows the objectives. [The] facilitator knows the case. [The] facilitator has read the case or knows what the case is. Then, based on that, [the] facilitator will provide adequate [and] appropriate feedback to the students regarding their performance.' (Male tutor, 7th interviewee, 3rd medical school)*

> *'The facilitator, she has more experience with other groups, she spent a lot of years [expert] not like peers [which do not have that expertise]. Peers cannot help students to explain how to improve because they are [at] the same level.' (Female tutor, 8th interviewee, 3rd medical school)*

In contrast, tutors perceive the students view the tutor as a person who has authority to assess students and give grades. Accordingly, the students might feel obligated to consider the feedback given, otherwise a low grade might be given to them. This could create an external motivation to improve the current performance instead of an internal motivation:

> *'He [the student] feels that this tutor has authority to give the grade … When [the] student receives the feedback, he may feel that he must do it; otherwise, he would lose marks [and] not be internally motivated.' (Male tutor, 6th interviewee, 3rd medical school)*

Tutor believe students perceive the tutor as an authority with expertise in a given field, and that the tutor can therefore provide objective and authentic feedback; however, students might feel obligated rather than motivated to apply the suggested recommendation, which is potentially problematic.

Peer feedback

Peer feedback is perceived by participants as advantageous insofar as the peers in question know each other, and, therefore, they understand how each is progressing. This is because they study together and, compared to the tutor, have a closer relationship:

> *'According to the peer, they [peers] know her [the one who is receiving the feedback] outside the classroom, okay, they know how she is changing [i.e. developing], how she makes an effort, how she is improving … even if they have negative feelings against each other or they do not like each other. So, peer is different that she has dual views, one on the personality of her peers and [one on the] the academic status of their peer. So, the tutor will not have these two views [i.e. only academic].' (Female tutor, 5th interviewee, 2nd medical school)*

However, tutors expanded and added that peers could be subjective when giving feedback, or that their feedback could be interpreted negatively as subjective and personal feedback:

> *'Disadvantage [of the peer] maybe like a conflict of interest sometimes between the students … Like, a student doesn't like [the] other student.' (Male tutor, 10th interviewee, 4th medical school)*

Participants reported that peer feedback could also be problematic insofar as students often do not consider the feedback to be valuable, because the giver and receiver are at the same educational level:

> *'Peers could feel "You are just like me as a student in the second year, so why I should consider your feedback!"' (Male tutor, 6th interviewee, 3rd medical school)*

Furthermore, it was described that peer feedback is influenced by the fact that it becomes less authentic when it is practiced in front of tutor. A tutor confirmed students discussions that authentic peer feedback requires a safe environment. Some students mentioned that they do not feel safe giving negative authentic peer feedback in front of the tutor because it might negatively influence the tutor's assessment of the student who receiving the feedback.

However, one participant added that that if a student gives a presentation, the tutor does not give feedback until after the peers:

> *'Sometimes, when you have written your own feedback, you'll wait for the*

students first … [to give] their feedback [to the peer].' (Female tutor, 4th interviewee, 1st medical school)

The reason for this strategy was to examine if peers give authentic feedback:

'What I do is the one I have noted before. If someone mentions it, I cross it out [i.e. her feedback] … so that is how I know they're giving appropriate feedback … If they mention three out of the five, I still have two. I would tell them, they have mentioned most of it; however, they did not say this.' (Female tutor, 4th interviewee, 1st medical school)

Moreover, some tutors believe that they have a vital role in facilitating the peer feedback process. One participant expanded, saying that he found it important to educate the students with respect to the proper practice of providing feedback:

'Now, you observe the feedback [observing a peer giving feedback], how the feedback is given, and you are also giving feedback many times on the feedback [i.e. assessing how peers give feedback]. How do you give feedback? Is it given in the right way or not? The students … should have experience in some courses on how to give and receive feedback.' (Male tutor, 9th interviewee, 4th medical school)

Others described different methods of correcting peer feedback, by informing the students that their peer feedback quality is being assessed:

'I tell them, I say, "You know you have your professional behaviour form and it states we have to score the feedbacker. If you're not giving appropriate feedback, it's not the person receiving the feedback that will lose; it's the person giving the feedback. That feedback is not appropriate, so you lose some marks".' (Female tutor, 4th interviewee, 1st medical school)

In conclusion, based on tutor perceptions, each source of feedback -tutor vs. peer- has its strengths and weaknesses and can complement each other. It is also important to consider the role of facilitator in the peer feedback process in ensuring that peers give authentic feedback.

The data from these interviews revealed crucial aspects of the tutor experiences in providing feedback. The tutors believe in the importance of feedback in PBL, though they have different opinions on some aspects. The central philosophy of PBL is that student self-regulation is a vital element that

influences the feedback process. The tutors outlined different communication methods when suggesting how students can improve and develop through the philosophy of self-regulated learning. Also, when students adopt the PBL philosophy and engage in student-centred education, they have positive reactions to feedback and are very receptive. Formative experiences, based in the traditional education experience, can also influence the feedback process due to unfamiliarity. When students progress through medical school, their maturity and self-awareness develop. Gender was identified as another potential influential factor, as female students reported as being more likely to seek tutor feedback; however, they can find peer feedback more challenging. Regarding peer feedback, the tutors had mixed perceptions of its value.

Also, these interviews revealed that feedback receiver has a role in the feedback process, pointing that some students are not ready to receive corrective feedback, that targeting students weaknesses; and that make the feedback process difficult. Furthermore, the school system has a role, too. Tutors may not always be forthcoming with feedback because of the system and processes in place.

Chapter 8: Triangulation

8.1. Introduction

This chapter examines the quantitative and qualitative data from the questionnaire study, focus group study, and interview study to analyse commonalities and notable differences through triangulation. In the quantitative stage, questionnaires were completed by students, which was followed by qualitative data collection by student focus groups and tutor interviews. Thematic analysis was conducted to derive the representative themes; three overarching themes were identified: understanding feedback quality, the reality of receiving feedback and influencing factors in the feedback process. Under each theme, further sub-themes were identified (see Table 8.1).

Table. 8.1 Themes and sub-themes

<table>
<tr><th>Major themes</th><th>Sub-theme 1</th><th>Sub-theme 2</th></tr>
<tr><td>Understanding feedback quality</td><td></td><td></td></tr>
<tr><td>The reality of receiving feedback</td><td></td><td></td></tr>
<tr><td rowspan="6">Key influencing factors</td><td>Culture and feedback</td><td></td></tr>
<tr><td rowspan="2">Learning environment</td><td>Self-regulated learning philosophy</td></tr>
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<tr><td>Feedback mode</td><td></td></tr>
<tr><td rowspan="2">Peer feedback</td><td>Negativity of peer feedback</td></tr>
<tr><td>Positivity of peer feedback</td></tr>
</table>

8.2 Understanding Feedback Quality

The first part of this research examined how the two stakeholders perceive and understand feedback. Under this theme, triangulation is reached by describing how the stakeholders define the feedback and perceive its importance and quality.

In both groups of stakeholders, feedback was defined as opinions and/or advice about a given performance for the purposes of improvement. In other words, students and tutors share a similar understanding of feedback:

> *'Feedback is when someone gives you advice, or he notices something about your performance.' (Male students, 2nd group, 1st medical school)*

> *'It is small advice or a guide that is given to students regarding how they are doing and what is expected of them.' (Female tutor, 11th interviewee, 4th medical school)*

Both groups also indicated that PBL involves a student centred-learning environment, and, as such, feedback is a crucial aspect of learning:

> *'I do not think that feedback is something that could be optional from the tutor. PBL is established and made for us [the students], and the tutor must give us feedback'. (Female students, 7th group, 3rd medical school)*

> *'There are a lot of skills that we facilitate in PBL, which are based on student-centred education, as you know. Because of that, we focus on the feedback.' (Male tutor, 2nd interviewee, 1st medical school)*

Regarding feedback quality, the students identified a number of important elements. For the purposes of development, almost all students believe that effective feedback involves suggestions and recommended changes concerning how to improve their performance. Alternatively, the tutors did not share a consensus regarding whether feedback is tutor regulated. Some suggested that feedback is a student self-regulated process, that is used to explore shortcomings and how to address these:

> *'It is the most important one [suggestions on how to improve] for me [to] actually improve, because there are a lot of people who are curious to know*

how to improve themselves, but they lack the guidance to work on that.' (Female students, 7th group, 3rd medical school)

'I often tell the student what did not go well in their performance, but I leave this element [how to improve] to them. I give them the freedom to think about how to solve such a problem by themselves. If I tell them how to do better, they will not think and brainstorm, and they will apply my steps. Later on, they could come back without any progress because they were just not internally convinced and motivated.' (Female tutor, 11th interviewee, 4th medical school)

Another tutor suggested that high-quality feedback involves targeting the personal aspects of students themselves, such as informing students about the good or weaker aspects of their interpersonal skills. Both stakeholders found this element of feedback to be important, because, by addressing personality issues, student attitudes can be addressed and corrected in the learning process. For example, both students and tutors suggested that targeting shyness can help with respect to becoming an active group member in the PBL tutorial:

'If a tutor tells me "Why don't you participate? Are you anxious?" This is a point in my personality … if the tutor discusses this point and advises me to be more confident, [such as by saying] "You should be confident; you do not have a problem that makes you not confident," [then] I will improve.' (Female students, 7th group, 3rd medical school)

'Later on, I discovered that they [the students] do not have enough language skills, and they are [too] shy to speak … [and they want to] avoid being embarrassed by group members laughing [at them]. So, then I give feedback about this issue [to speak freely without fear] to the whole group in the PBL tutorial.' (Female tutor, 11th interviewee, 4th school)

Although there is agreement between the two stakeholders concerning the importance of this element feedback, the tutors are slightly more cautious than the students in addressing it. In particular, some tutors suggested that targeting personal issues must be done as sensitively as possible:

'If you start to give them negative personal feedback, they become so aggressive … You cannot give them [the students] negative feedback on their own personality.' (Female tutor, 5th interviewee, 2nd medical school)

Overall, feedback is an important part of the PBL education process; both students and tutors agree on this. Feedback plays a vital and supportive role, but having said this, students and tutors differ in their opinions with respect to how feedback should be approached based on the PBL philosophy. In general, tutors believe that the feedback process should involve the student being self-regulated in working out how to improve. In contrast, students believe that feedback should be regulated by the tutors. The principle of the zone of proximal development (ZPD), as discussed by the cognitivist Vygotsky (1978), applies here. Student opinion tends to be that self-regulated learning cannot be sufficiently developed without external facilitation (scaffolding). Self-regulated learning is an influencing factor in the PBL feedback process, and it will be further described in subsequent sections.

8.3 The Reality of Receiving Feedback

In addition to examining how stakeholders perceive feedback quality, their experiences with providing quality feedback were also examined. As explained previously, this research explores how different feedback purposes are communicated by tutors and students (see Table 5.4, Chapter 5).

The statistical analysis revealed that the first two purposes of feedback, informing students of what went well and what need to be improved in their performances, are experienced by students more than other aspect of feedback, such as explaining how to do better. To further illustrate this, 18.5% of the participants reported shortcomings in receiving feedback telling them what needs to be better compared to 28.8% in feedback that tells how to do better (see Table 5.4, Chapter 5). It is further confirmed by the qualitative analysis that most of the concern were regarding how to do better:

'The tutor only gives [feedback on] what is right and wrong, so [it does] not serve other purposes of feedback.' (Female students, 4th group, 1st medical school).

By analysing the tutor interviews, it is evident that the feedback given varies. Some tutors, for instance, only give marks and do not provide detailed feedback:

'We [the tutors] will give them [the students] total marks, and, after giving the marks, [the] students … [can reflect] further.' (Male tutor, 1st interview, 1st medical school)

Other tutors limit their feedback to the first two purposes (what went well and what needs to be better). As explained previously, some tutors prefer to leave the student to work out how to do better, in accordance with self-regulated approach, this could explain the reason behind 28% of students reporting that tutors rarely or never tell students how to do better:

'I often tell the student what did not go well in their performance, but I leave this element [how to improve] to them … I give her the freedom to think about how to solve such a problem by herself.' (Female tutor, 11th interviewee, 4th medical school)

Another potential reason is that data revealed that feedback is tutor driven; that is, if tutors do not provide feedback, then the students will not receive any unless they actively seek it:

'They [the students] can come to you [as the policymakers told the tutor] if they found a cut in their marks and discuss with you.' (Female tutor, 5th interviewee, 2nd medical school)

Furthermore, the quantitative and qualitative analyses revealed that negative personal feedback is given least frequently. Overall, 47.3% of participants said they rarely, if ever, receive this type of feedback (see Table 5.4, Chapter 5). This could be attributed to the cautiousness and sensitivity of the tutors, as highlighted in the previous theme.

Therefore, the quantitative and qualitative data for both tutors and students suggest that the reality of feedback experience may not be matching from students' expectation. Whilst students may find this to be lacking, some tutors purposefully choose this approach to support students to becoming self-regulated learners. Whilst both students and tutors support self-regulated learning, their satisfaction with the approach to feedback differs.

8.4 Key Influencing Factors

The data indicates that many different factors influence the feedback experience in PBL. In this section, commonalities and differences are highlighted and presented.

8.4.1 Culture and Feedback

Culture is a key influencing factor in the feedback process in PBL. In particular, cultural factors are related to language and gender.

Language

Regarding language, around 50% of the participants answered the questionnaire in Arabic, which suggests that many students prefer Arabic (their first language) to describe their experiences.

Furthermore, in the qualitative focus groups, participants suggested that Arabic should be used to optimise the feedback process. In particular, tutors can use Arabic to better serve different feedback purposes, such as discussing with students about the good and weak elements of their work:

> *'I found that [for] the tutor who shared a similar language with the student the feedback tends to be more detailed, serving much of the purposes of feedback.' (Male students, 10th group, 4th medical school)*

In addition, for peer feedback, the students are more comfortable with Arabic than English, and stated that using Arabic can result in more detailed feedback:

> *'We [as peers], when giving feedback in Arabic, we feel relaxed and give detailed feedback, but when giving feedback in English, we become limited to one or two points only! I don't know why! So, when I talk in my native language, I would say what I really have in my mind, even though I am a good English speaker.' (Female students, 4th group, 1st medical school)*

Analysing the tutor interviews also confirmed the role of using Arabic, as a native language, in the feedback process. As previously described, a tutor preferred the verbal form of feedback over the written form, because it is usually delivered in Arabic instead of the formal English used in the written feedback. Students may struggle to understand English since it is a second language in Saudi Arabia; and confirms what students expressed:

> *'Written feedback is very objective, very direct. Language could be misunderstood, especially when we use English in feedback [in the written form]. You know, we are second language speakers; we always have a problem in communication in English, in both understanding and telling the information … but in face-to-face feedback, there is body and face language,*

tone of the voice and native Arabic language.' (Female tutor, 5th interviewee, 2nd medical school)

Gender

Regarding the influence of gender, quantitative analysis suggests that females are more dissatisfied with tutor feedback than males. For example, there is a statistically significant difference between the genders (W = 60,559, p = 0.001) in receiving feedback concerning why a given performance was good or weak: 39.8% of females reported never or rarely receiving such feedback, whereas 28.2% of males claimed this. This reported difference has a large effect size (d = 3.4, see Table 5.7, Chapter 5).

The tutor interview results revealed that gender is a potential influencing factor. A tutor (male tutor, third medical school) reported that female students tend to seek feedback more than male students, which could explain why females reported more dissatisfaction in receiving feedback than males. It may be that females have more insight and are keen to know about how to improve, they are potentially more aware of feedback deficiencies than males.

Therefore, culture appears to play a vital role in the feedback process in PBL medical schools in Saudi Arabia. If the feedback giver and receiver share a similar language, then the feedback process will be more easily facilitated and contain more detailed information. According to the cognitivist learning paradigm, language is a primary tool for learning and thought (Curzon and Tummons, 2013). Communication is an effective constructive tool to acquire new information and knowledge. In this research finding, the first language, i.e. Arabic, is a better communicative tool in the feedback process than a second language, i.e. English. This influencing factor should be considered when identifying good feedback practices in PBL. Gender difference is another factor that should be further researched to optimise the learning environment for both genders.

8.4.2 Learning Environment

As described in the previous chapters, the learning environment is a key factor influencing the feedback process. This theme can be divided into sub-themes.

Feedback as a necessary factor in facilitating self-regulated learning

PBL is a student-centred learning environment where self-regulation is fostered. Feedback as a necessary factor in facilitating student development in self-regulated learning. Self-regulated learners, according to Dornan et al. (2011, p. 342), are 'involved in diagnosing their own learning needs, formulating goals, identifying resources, implementing appropriate strategies and activities and self-assessing and reflecting on both the process and outcomes of their learning.' Thus, medical students in the PBL curriculum are expected to independently address the negative aspects of their performance based on self-identified resources and plans. In addition, in this environment, the tutor provides external support that facilitates student progress.

Based on the research data, it is evident that the majority of students expect detailed feedback that offers strategies on how to achieve the required changes. Although few students prefer to address improvement plans independently without the help of tutors, the majority prefer tutor help and are dissatisfied with self-regulation in the feedback process:

> *'We are required to do this feedback [how to do better] while we reflect … reflect on a given grade … So, tutors assess students based on specific criteria, and then [the] students reflect [on] why the performance … was good or bad and what … [they are] going to do [to improve].' (Female students, 4th group, 1st medical school)*
>
> *'We do not receive it [the feedback on how to do better] … Here [in the school], if we ask tutors [how to do better], they answer "It is SDL."' (Male students, 2nd group, 1st medical school)*
>
> *'I do not know what the benefit is for attending courses in this school! unfortunately, I do not know why I am here. They ask me to read, so what should I read?!! So, what you have just asked about [how to do better] is a really good thing; I hope we are told that here.' (Male students, 2nd group, 1st medical school)*

Tutor participants discussed how student-centred learning influences student responses to feedback, especially negative feedback that targets shortcomings in student performances. It was reported that students respond differently to negative feedback. Students who believe in student-centred learning

often view external feedback as a constructive tool, whereas students who believe in tutor-centred learning often view feedback as a final judgment on their performance and react negatively to it.

Accordingly, maturity is a potential factor that can influence how students respond to feedback. Both stakeholders highlighted that the maturity of the student (the receiver) plays a crucial role in the positive interpretation of feedback. Third-year students perceive and interpret feedback more constructively than first-year students. They stated that first-year students might interpret the feedback as negative:

> *'… in the first academic year, we were not accepting [of] negative feedback, and there could be a negative reaction to that. Now [in the third year] it is different; tutor's feedback is more effective [accepted] … there is maturity in accepting negative feedback now.' (Male students, 11th group, 4th medical school)*

Tutors stated that second-year students are much better than the first years. By continued experience of receiving feedback in medical school, students develop a positive understanding of feedback:

> *'… Giving feedback in the first year is not a big problem. Giving feedback is not a big problem. The big problem [is] how the student received the feedback, and this is different in the second year … They think in the first year that feedback is given only to improve things or negative points.' (Male tutor, 9th interviewee, 4th medical school)*

This finding can be reviewed based on the experiential learning paradigm, which views learning as a process of reflection on experience (Kolb, 1984). Because of continued reflection on previous feedback experiences, medical PBL students acquire feedback receiving skills and develop a positive understanding of feedback.

Another potential factor that can influence how students respond to feedback in PBL is formative experiences. Students indicated that they were not accustomed to receiving feedback before starting the medical PBL school:

> *'We, as medical students, were very excellent students in high school, obtaining high grades. Then [in medical school], you [as a feedback giver]*

criticise us, so that affects us emotionally: "Why do you criticise me!?"' (Female students, 4th group, 1st medical school)

The data from tutor interviews also indicated the influence of formative experiences in students responding to feedback:

'They are not open to the feedback … because of their personality, maybe because of the way they're brought up, maybe their parents have not told them their weaknesses. They appreciate them all the time and ignore this [negative feedback].' (Female tutor, 3rd interviewee, 1st medical school)

This was further expanded on in the tutor interview results what it was pointed out that a new learning environment with new learning strategies can be a challenging factor:

'… in medical school, they encountered new strategies by having discussions in small groups and being central to the education. Honestly, it is very challenging, very challenging.' (Female tutor, 5th interviewee, 2nd medical school)

To summarise, the PBL environment is student centred and based on self-regulated learning, which influences the feedback process. Some tutors provide limited feedback based on the student-regulation process, leaving the students to reflect on and identify the improvement plan themselves. The students themselves provided various responses to this strategy, but the majority find self-regulation to be challenging and their feedback perception is influenced by their formative experiences. The feedback process in PBL is a new experience for some students, and, as such, it can negatively influence their response to feedback.

Expert tutor

Expertise is another influencing factor. As previously explained, PBL tutorial groups aim to solve a problem written as a case. According to the student focus groups, knowledge-related feedback is influenced by tutor expertise. A tutor who is an expert in a given field can provide optimal feedback. This is because they are more aware of the subject in question compared to tutors who lack the requisite knowledge:

'… he [unspecialised tutor] had insufficient knowledge; there were a lot of things that he was not aware of …' (Female students, 7th group, 3rd medical school)

'It happens [the satisfying experience of feedback] if the tutor is an expert in the case.' (Male students, 3rd group, 1st medical school)

One tutor discussed her experience in providing expert feedback. She said that she focuses on student performance, not knowledge; however, if the students are discussing a case in which she has expert knowledge, then she asks the students to read further for missing information:

'When I give a feedback, I would focus on the students' performance, okay? However, if the case study is about my speciality, I would guide them, e.g. "Girls, is your discussion enough?" I would ask … [whether] they missed some information … so, I would ask them to read further about this point' (Female tutor, 11th interviewee, 4th medical school)

It is evident that tutors with expert knowledge in a field are more aware of student discussion regarding said field. This is a potential influencing factor behind a range of participants' reports in the quantitative questionnaire. If the students have a tutor who is not an expert, then the students are often dissatisfied with the feedback provided in PBL, as the tutor has insufficient knowledge and cannot effectively guide them.

8.4.3 Feedback Mode

Student (in both research stages) and tutor (in the qualitative) perceptions regarding the feedback mode were sought. Student participants prefer the verbal mode of feedback to the written mode (86.5% vs. 70.6%) (see Table 5.3, Chapter 5). The qualitative analysis identified the justifications for these statistical results. Students preferred verbal feedback due to the opportunity to discuss and negotiate with the tutor, as well as due to the positive effect of body language:

'In the written mode, she [the tutor] tells me the negative such and such. However, if she tells me that verbally, I would reply "Why?" and "Where exactly is my mistake?" Then she would answer that. After that, I would ask how to do better; then she would make suggestions.' (Female students, 6th group, 2nd medical school)

'You would feel that [through the verbal feedback] eye contact makes you feel that the tutor is focusing on you, so you would feel a responsibility to do better.' (Female students, 7th group, 3rd medical school)

The qualitative student focus groups confirmed the quantitative analysis; namely, that verbal feedback is an important mode that PBL policymakers and tutors should consider, instead of limiting the feedback process on the written form. Students feel that it is easier to discuss the feedback in a face-to-face situation, because it facilitates dialogue that can help the students to understand the tutor's comments. It is crucial to creating optimal feedback for PBL students.

8.4.4 Peer Feedback

In PBL, the feedback source is another crucial aspect. This research aimed to explore student preferences for feedback source, i.e. tutor or peer.

Negativity of peer feedback

Over one-third of those surveyed (38.6%) reported that they only prefer tutor feedback (see Table 5.3, Chapter 5).

The qualitative analysis explored some important factors behind these statistics. Some factors influence student satisfaction of the given peer feedback. First, peers are not experts in the PBL tutorial groups, and they cannot, therefore, identify student needs and weaknesses. In contrast, the tutor is an authority figure with the requisite expertise to provide effective feedback:

'I prefer the tutor because he is more expert so that he can give in-depth feedback.' (Male students, 9th group, 4th medical school)

In addition, the tutors occupy higher academic positions, so tutor feedback is respected:

'The academic position of the tutor is much higher than my peers, so I just ignore any comment from my peers because it is often for subjective reasons, not to improve me.' (Female students, 7th group, 3rd medical school)

The most important factor for peer feedback is authenticity. As explained in the chapter 6 (focus group results), peer feedback is less authentic than tutor feedback. This feedback can be easily influenced by the personal issues between peers:

> *'… peers do not care to help you progress; it is a personal issue, i.e. if I [as a peer] like him, I will give positive feedback, and, if we have a personal problem, I will not give him good feedback.' (Male students, 1st group, 1st medical school)*

> *'I prefer the tutor's feedback because he will not give you fake feedback.' (Female students, 8th group, 3rd medical school)*

A tutor confirmed the role of personal/relationship issues influencing peer feedback:

> *'Disadvantage [of the peer] may be like a conflict of interest sometimes between the students … Like, a student doesn't like another student.' (Male tutor, 10th interviewee, 4th medical school)*

Another tutor highlighted that students, when receiving peer feedback, may interpret it as personal feedback:

> *'Students sometimes misinterpret peer feedback; they interpret it as personal feedback.' (Male tutor, 2nd interviewee, 1st medical school)*

Peer feedback authenticity can also be influenced by the physical place where the feedback is given. Through the data collection process, the location was identified as an influencing factor for the peer feedback process. Almost all student focus groups indicated that giving peer feedback within the PBL tutorial group and in front of the tutor carries with it the risk of a negative tutor assessment. As explained previously, when peers give authentic feedback addressing a weakness in a friend's performance, the tutor is often reminded of such weakness and includes it in the summative assessment, which, in turn, results in peers attempting to avoid providing negative feedback and limiting their comments to the positive performance, thereby reducing the authenticity of the feedback:

> *'The student is too worried to give his peer feedback, to avoid tutor assessment, so only positive feedback is given.' (Male students, 3rd group, 1st medical school)*

This factor can be also reviewed in the context of Maslow's hierarchy of needs (1954), in which feeling safe is considered to be one of the basic human needs. In this research, students reported that a safe learning environment is essential for authentic peer feedback. This also related to behaviourist learning, which asserts that behaviour changes in response to stimuli (Gagne, 1983). As previously explained in the literature review, stimuli are often regarded as 'reinforcement' and influences others' behaviour. In this research finding, students believe that the tutor's presence is a negative reinforcement that shapes and influences their behaviour in regard to giving feedback. In other words, it makes them less motivated to give authentic peer feedback.

A tutor was aware of student anxiousness and confirmed that peer feedback needs a safe environment:

> *'Once they know you are not evaluating the student based on the feedback, they give appropriate feedback for improvement.' (Female tutor, 4th interviewee, 1st medical school)*

Later on, as suggested in the previous chapter, this same tutor mentioned that, in assessing a student, she avoids giving feedback until the peers have done so. She claimed that she uses this strategy to assess the authenticity of the peer feedback, but students might interpret this differently. This factor should be considered when attempting to create a safe environment for peer feedback.

Positivity of peer feedback

Although more than one-third of the student participants only prefer tutor feedback, as mentioned above, 58.5% prefer both sources (see Table 5.3, Chapter 5). In other words, 58.5% of the participants think that peer feedback is helpful in PBL.

The qualitative focus groups and interviews explored the crucial factors behind these results. Students pointed out that peers have an advantage in that they are more aware of student situations due to their long-term relationships. This is because they study together and, as such, are aware of each other's weaknesses and strengths:

> *'I prefer peer [feedback] because sometimes she has been a member of the same group for several years, so she can notice how I progress.' (Female students, 4th group, 1st medical school)*

> *'The tutor sometimes cannot exactly understand what you mean, but a peer understands you much better because he is close to you.' (Male students, 10th group, 4th medical school)*

A tutor confirmed this advantage of peer feedback:

> *'We are in the same building [as peers]. We are roommates, so I am close to you all the time, …12 hours I am with you… but the tutor [may contact students] 4 to 8 hours only [in the school], after that he [the student] is in home you [as tutor] do not know what is he doing actually.' (Male tutor, 10th interviewee, 4th medical school)*

Therefore, both students and tutors believe that peer feedback is not sufficient, as peers lack expertise. In addition, the authenticity of peer feedback is reduced by the negative relationship between students, as stated by the students themselves. From the tutor perspective, the reduced authenticity can be attributed to negative relationships, which confirms the student perception, or else due to misinterpretation from the feedback receiver. In addition, based on both stakeholders, peer feedback needs a safe environment for the authenticity to be optimal. Although peer feedback has some disadvantages, overall, it is accepted and preferred by students.

In conclusion, the aim of this research project was to gain insight into the experiences of medical students with respect to receiving feedback in PBL in Saudi Arabia. Overall, 856 students were surveyed, then, 91 students and 11 tutors were interviewed from 4 medical schools. Using this triangulation process, some commonalties and differences were identified. In particular, there is a common underlying belief that feedback in PBL is part of the student-centred learning approach and developing self-regulation skills; however, differences in perceptions exist concerning how feedback should be practised. Furthermore, there is a common perception that both culture (language) and the formative experiences of students influence the feedback process in PBL. It is, therefore, important to discuss the key findings of this PhD project and compare them with existing studies to highlight how they can contribute to current knowledge. This is attempted in the next chapter.

Chapter 9: Discussion

9.1 Introduction

Problem-based learning curricula have been adopted and implemented in many medical schools across the world, and this is a relatively new development in the Kingdom of Saudi Arabia. The central philosophy of the PBL curriculum is student-centred learning, which require fostering self-regulation skills (Barrows and Tamblyn, 1980; Davis and Harden, 1999). Feedback is a crucial aspect of this process.

This is the first detailed research that explores tutor and student perceptions regarding the feedback process in the PBL curriculum in the Saudi Arabian context using mixed methods. Specifically, it investigates how students and tutors experience different feedback modes, such as verbal vs. written, and different sources, such as tutor vs. peers. More importantly, it identifies potential factors influencing the feedback quality in PBL in the Saudi Arabian medical schools context.

The key findings of this study indicating that: students have expectations of what quality feedback is but find the reality does not always match their expectations. It was found that students and tutors share similar perceptions regarding the quality of feedback; however, there are differences. Moreover, this research reveals the quality of feedback process is influenced by the learning environment, culture, feedback mode and feedback source.

In this discussion chapter, the key research findings are discussed in relation to existing literature. The sub-sections are organised based on key findings, followed by the contribution of this study that will be highlighted including consideration of its strengths and limitations. This chapter will be followed by the study conclusions and recommendations for future research and practice.

9.2 Quality of Feedback

The student participants believe that feedback is a driver for development. They believe that they have the right to receive feedback to correct their mistakes and identify their strengths. These findings are consistent with existing research. According to Alfehaid et al. (2018), without feedback, improvement is difficult for students, and it is their absolute right to receive quality feedback. In addition, through feedback, students become aware of how others perceive them (Holen, 2000).

Therefore, according to the finings presented in this thesis and existing literature, feedback is a central and necessary process for students.

Regarding feedback quality, a crucial finding of this study is that most students expect to have feedback that explains (or offers strategies on) how to improve. They appreciate feedback that identifies the strengths and weaknesses in their performance and plans on how to improve.

This finding is contrary to that of Mubuuke et al. (2017), who found that students self-regulate their performance to reach the expected standard, i.e. independently work to improve their performance. According to Mubuuke et al. (2017), students use tutor feedback, which addresses what needs to improve, as a base for their improvement plan.

A possible factor behind these contrary findings is the different cultural contexts between the study conducted by Mubuuke et al. (2017) and the present one. This is supported by similarities in the findings between the current study and previous studies that were conducted in Saudi Arabia (Alhaqwi, 2012; Alfehaid et al., 2018). For example, Alhaqwi (2012) explored PBL medical student perceptions of the feedback process using a quantitative questionnaire. A key finding of their study is that most students believe that feedback should involve suggestions on how to improve. Moreover, students in both studies (the present study and Alfehaid et al., 2018) accept negative feedback as they recognise it is the first step in guiding them in where to focus on their development.

One of the contributions of this thesis is it identifies areas of mismatch between students and tutors' perceptions of quality of feedback in Saudi Arabia. Tutors believe that students should be self-regulated in their development process. On the other hand, students believe that the tutor should have a role in guiding them how to improve, and feedback quality is enhanced when it contains suggestions how to do better.

9.3 The Reality

The reality of the feedback process does not always reflect expectations. This PhD research examined how frequently students receive feedback. As shown through the quantitative results (Chapter 5), the participants reported shortages in receiving some aspects of the feedback process. For example, they were rarely or never told how to do better. To illustrate this further, although only 18.5% of students reported that they are never (or rarely) told what is weak in their performance, 34%

reported that they never (or rarely) receive an explanation of why their performance is weak. Furthermore, 28.8% reported that they are never or rarely guided on how to do better.

In line with the present results, previous studies have demonstrated that students are dissatisfied with the feedback experience. In the context of Saudi PBL medical schools, Alhaqwi (2012) found that most students (85%) believe that feedback is important for their learning, but only approximately 20% reported receiving regular feedback. In another Saudi PBL study conducted by Al-Mously et al. (2014), 43.6% of participants (n=110) believed that feedback quality is poor; none believe it is excellent. Only around 15% of participants reported receiving corrective feedback indicating what needs to be done better.

There are insufficient investigations regarding the alignment between tutor and student perceptions of the feedback process, especially in the context of Saudi Arabia. A Malaysian study conducted by Perera et al. (2008) examined student and tutor perceptions of the feedback process. They found a mismatch between the two stakeholders. In particular, 75% of the tutors believe that they give regular feedback, whereas only 55% of students believe they receive regular feedback; in addition, 86% of the students requested verbal face-to-face feedback, whereas only 25% of tutors offer such feedback. In general, students reported dissatisfaction if they receive a grade without feedback explaining the grade. Furthermore, 93% of students asked for suggestions on how to improve, but only 43% of tutors provided such feedback. The present study further supports the idea that PBL students might be dissatisfied with the feedback experience, and that there could be a mismatch between the two stakeholders' expectations. According to the students, they are dissatisfied because they frequently receive a grade without any justification for that grade (see Chapter 6). In addition, they are dissatisfied with comments that inform them about incorrect elements in their work without explaining why such elements are incorrect. Moreover, one of the key findings of this research is that most students believe that suggestions for improvement are important, but some tutors do not agree with this view.

While previous research has investigated feedback that informs students of incorrect academic elements, the present research contributes by investigating the way in which PBL students are informed about their areas of weakness and, specifically, explanations as to what made such performance poor (i.e the reasons). That explanation is crucial to foster self-regulation as students should be aware of "attribution about failure" as called by Hattie and Timperley (2007, p. 95):

> *'Students' attributions about success or failure can often have more impact than the reality of that success or failure. There can be deleterious effects on feelings of self-efficacy and performance when students are unable to relate*

the feedback to the cause of their poor performance. Unclear evaluative feedback, which fails to clearly specify the grounds on which students have met with achievement success or otherwise, is likely to exacerbate negative outcomes, engender uncertain self-images, and lead to poor performance.'

Furthermore, while previous research, by Perera et al. (2008), identified some inconsistencies between the two stakeholders, the present research provides a clearer understanding as to why certain inconsistencies exist and also identifies the factors that influence the feedback experience. The following section discusses this in detail.

9.4 Factors Influencing the Feedback Process

9.4.1 Culture

Three cultural factors were found to influence the feedback process in PBL Saudi medical schools: the cultural interpretation of the feedback concept, language and gender.

Interpretation of feedback

Some students pointed out that feedback can be interpreted as an insult:

*'It might be that we culturally do not accept the feedback philosophy. It is currently interpreted as this person (feedback giver) is **insulting** me!' (Males, 11th group, 4th medical school)*

This finding further supports a previous quantitative Saudi study (Alhaqwi et al., 2012), which found that approximately 25% of students believe that negative feedback can be interpreted as an insult. Addressing this perception in medical education, especially in the PBL curriculum, is important in order to foster positive engagement with feedback. This PhD research highlights the influence of culture on feedback conceptualisation - how feedback is perceived by receiver.

Language

Language was found to be another influencing factor on the feedback process. The questionnaire, focus groups and interviews revealed that students prefer their native Arabic language when expressing ideas for either giving feedback for peer or receiving and responding to tutor feedback. As pointed out previously, a large proportion of students wrote their answers in the open items responses in the questionnaire in Arabic. The qualitative analysis also confirms this. Although English is a formal language in Saudi medical education, this study revealed that Arabic is better for tutors when communicating feelings and using Arabic-specific phrases, as it creates a friendly and emotive atmosphere. Moreover, when provided in Arabic, feedback is more detailed and, as such, can provide higher quality feedback for students, about what exactly went wrong in the performance and why. Indeed, in using the native Arabic, students can easily discuss the feedback with the tutor in depth.

This finding is consistent with the research conducted by Al-Mously et al. (2014), who found that approximately 66% of students in a Saudi medical school prefer Arabic. Due to the nature of quantitative research, Al-Mously et al. (2014) were unable to investigate why this is the case. The present research contributes a clearer understanding of the advantage of applying Arabic in the feedback process, as highlighted above. In addition, it also implies that a similar cultural background between the tutor and the student has a positive influence on the feedback content.

Due to the consistent findings between this study and that of Al-Mously et al. (2014), the conclusion can be reached that the use of English is a possible barrier to ensuring a high-quality feedback experience amongst Saudi Arabian medical students. According to Al-Mously et al. (2013), English proficiency tests should be introduced for beginner medical students.

Language was also identified as an influencing factor by Mubuuke et al. (2016b); however, in this paper, the language issue is related to the difficult terms used when providing feedback instead of being related to native language vs. second language.

In light of this, to ensure an optimal feedback experience, tutors and students should communicate in a language with which they are comfortable. Arabic is recommended and preferred by some students; however, many tutors who work in Saudi medical schools do not speak Arabic.

Gender

With respect to gender, it appears that different aspects in the feedback process are influenced by gender differences. First, this PhD research found that female students are better than males at accepting and receiving feedback. This is not the first time scientific research has identified a gender difference in seeking feedback. According to Sinclair and Cleland (2007), a significant difference exists between females and males, as the former seeks formative feedback more than the latter. The present research, which is based on mixed methods, is helpful in confirming other literature findings, such as Sinclair and Cleland (2007), that females tend to be more engaged in academic education compared to males.

Existing studies have identified the gender difference in the context of Saudi medical education. Both Al-Mously et al. (2013) and Al-Drees et al. (2015) found that female students tend to work harder than males. Al-Mously et al. (2013) found that females have better academic performances in the pre-clinical courses than males, and Al-Drees et al. (2015) noticed that, for a PBL tutorial, females spend more time preparing and read more books than males. In contrast, another Saudi medical education study revealed that both genders have a similar level of motivation for education (Soliman and Al-Shaikh, 2015).

The results of the present research confirm the results of Al-Mously et al. (2013) and Al-Drees et al. (2015): men and women have different attitudes to learning. While these Saudi medical studies targeted student education, the present research focused on feedback with respect to student receptiveness. In particular, the present research highlighted the fact that female students have superior feedback receptiveness and have higher willingness to know their weaknesses.

In addition, female students had a different reaction toward peer feedback. The quantitative analysis revealed a significant difference between the two genders in receiving negative personal peer feedback, with female students receiving less than males. Furthermore, the qualitative analysis suggests that females have more negative reactions toward negative peer feedback than males. This finding is consistent with the PBL peer-feedback research conducted by Kamp et al. (2014), who observed that female students have reduced academic achievement after receiving peer feedback. Due to the quantitative nature of the Kamp et al. (2014) study, they failed to investigate the influencing factors; instead, they attributed the finding to low achievement due to a myriad of potential reasons. This PhD research further confirmed one of the suggested reasons by Kamp et al. (2014, p. 64): 'It could be that females are more intimidated by the public peer feedback, especially if it concerns negative peer feedback.'

In contrast, this finding is inconsistent with the study by Alhaqwi et al. (2015), which suggests that female students are more accepting of negative peer feedback than males. Although the study by Alhaqwi et al. (2015) was conducted in a Saudi PBL context, the results are different to those obtained in the present study. This can be attributed to differences in how curricula are implemented in different medical schools. In other words, for Alhaqwi et al. (2015), the study participants might have undergone better educational training concerning the concept of peer feedback and how it is practised. Indeed, one of the findings of the current work is that providing training on what feedback is and how to practice it can improve the quality of students experience.

9.4.2 Self-Regulated Learning

The analysis of this research revealed several influencing factors on the process of feedback, and one of these factors is the learning environment, specifically the philosophy of PBL: self-regulated learning. As explained in the literature review, self-directed learning (SDL) and self-regulated learning (SRL) are frequently referred to in the medical education literature. Although differences exist, they have a similar theoretical concept, which involves students independently setting goals and planning (Saks and Leigen, 2014; Gandomkar and Sanders, 2018).

This PhD research found that most students expect feedback to address the strengths and weaknesses of their work, thereby guiding them on how to improve. This is not a surprise and is in line with what the literature outlines as key elements of good feedback practice. However, what the data of this study also shows is that tutors do not always instruct students on how to improve, as they expect students to be self-regulated learners who can work independently. However, this experience results in students being dissatisfied. Furthermore, the data indicates that students perceive feedback to be tutor centred, and, as such, if a tutor does not provide feedback, the students may not seek it.

It is important that PBL students are motivated to be self-regulated learners. According to Krause and Stark (2010), if PBL students are aware of the need for self-regulation, then this awareness will help them in the reflection process, which, in turn, will foster self-regulated learning.

Self-regulated Learning in Saudi Arabian medical education

As explained in the literature review chapter, both SDL and SRL are referred in medical education literature and share a similar concept that setting goals and planning for improvement are approached by students independently. However, the task itself is identified by self-directed

learners, and it is identified by the tutor in the situation of self-regulated learning. Therefore, self-directed learner and self- regulated learner differ in who sets the task but have a similar process of independent development. Thus, the self-directed learner is often a self-regulated one. In this thesis, literature related to self-directed learning is included because it refers how students in Saudi medical schools are also self-regulated learners, as discussed below.

Literature related to Saudi medical education explored whether health profession students had low levels of self-directed learning, as this may explain why the current student participants expect a tutor-centred feedback process.

Two Saudi studies identified positive student feelings toward PBL and its concepts. Alhaqwi et al. (2015) found that 84% of students were satisfied with the concept of PBL, and 65% recommend the learning environment of PBL to other medical schools. In a comparison between PBL and traditional education, Al-Damegh and Baig (2005) concluded that students prefer PBL as they find it to be a supportive environment for absorbing knowledge and cultivating learning abilities and professional skills.

Although students have shown a preference for the PBL approach (Al-Damegh and Baig, 2005; Alhaqwi et al., 2015), other Saudi medical education-based studies highlighted the fact that (based on the SDL readiness scale) students have minimal self-directed learning readiness (Elamin, 2008; Soliman and Al-Shaikh, 2015; Al-Basri et al., 2017; Alharbi, 2018), and especially self-management skills. These self-management skills include several components: more interestingly, one of these components is ‘solving a problem using a plan’. “The SDL Readiness Scale” is a scale used to test students’ readiness in becoming self-directed learners and was initially developed by Fisher et al. (2001). Students' readiness is tested by this scale in the form of a questionnaire (survey).

Al-Mously et al. (2014) found that fifth- and sixth-year medical students still need feedback from the tutor most of the time. These findings demonstrate that medical students in Saudi Arabia often face difficulties when practising feedback based in a self-regulated learning environment, such as PBL.

Supporting students

Developing effective feedback practice in a PBL context, where students might not be sufficiently self-regulated, needs careful planning and clear guidelines. This PhD research found that some tutors prefer and believe in the process of “scaffolding” as an effective way to gradually develop self-regulation among students. As pointed out in the analysis of tutor interviews (Chapter 7), some tutors

leave students to independently plan their improvement in performance, but others adapt different strategies where they encourage independence and only provide support for aspects of development when they feel the student could benefit from this. These tutors believe that this scaffolding process is the most useful strategy to support students when self-regulation is challenging. Furthermore, a group of students preferred independent planning and reflection to improve their work, opting to seek further support only when needed.

Supporting students to overcome potential challenges related to independent learning is related to what Vygotsky (1978) referred to as the "zone of proximal development" (ZPD). As explained in the introduction chapter, ZPD concerns the zone of knowledge and skills that students cannot address when isolated, and, as such, external support is required from peers or tutors. According to Bruner (1986), providing assistance to learners when it is needed and gradually decreasing it when they are sufficiently independent is called 'scaffolding'. PBL medical students are expected to be self-regulated learners; however, they may be insufficiently prepared for self-regulated learning, especially in the early academic years. Regarding the process of feedback, students may require external guidance until self-regulation is well developed. This PhD research found that some tutors and students perceive this process of scaffolding as crucial in developing self-regulation approaches.

The preferred strategy for tutors and students, i.e. giving students a chance to self-regulate and giving support when needed, is related to what Nicol and Macfarlane-Dick (2006) recommend. Nicol and Macfarlane-Dick (2006) reviewed literature and synthesised effective feedback principles that support self-regulation among students. One of these principles is to give students chances where they can easily reach the desired performance (Nicol and Macfarlane-Dick, 2006). They specifically suggest strategies that can be used to practise this principle: providing feedback on a work in progress, such as student plans for improvement, for example commenting on how students are planning for development. Also, asking students to resubmit and then giving feedback on the resubmitted work is a scaffolding type recommended by Nicol and Macfarlane-Dick (2006). In addition, they suggest that students could share their plans with their peers for the purposes of discussing how the plan could be further developed. This confirms that tutor and student participants input is an effective strategy to build self-regulation among students by the feedback practice. This PhD research contributes to the existing literature by suggesting that feedback in Saudi PBL medical schools could develop the current low readiness level of self-directness, that is key for successful professional practice.

Maturity

When self-regulation is effectively developed in students, their attitudes can change with respect to the feedback process. In this PhD research, the results highlighted that student response to feedback is influenced by their beliefs concerning student-centred learning. As explained in Chapter 7, students who believe in student-centred learning will positively react to feedback, as, for them, it is external support and facilitation. However, students who believe that learning is tutor centred might perceive the tutor feedback as a final judgement, and, as such, perceive feedback in a negative way. This perception was further confirmed by other participants, who pointed out that continuous feedback practice could improve student interpretation of feedback, especially negative feedback, and that second-year medical students are much better receivers of feedback than first years. Taking the two together, continuous feedback practice in PBL might develop students' awareness of self-regulation and student-centred education. This process of change was labelled by participants as 'maturity'.

There is little research investigating the PBL environment, especially how the feedback process improves student self-regulation in a Saudi Arabian context. The present research found that maturity is an influencing factor, which is contrary to the results of Alhaqwi et al. (2015), who found that second-year students tend to be more accepting of feedback than students in the final year. However, this finding is consistent with that of Al-Dayel et al. (2019), who found that students perceive that PBL helped them to accept the feedback of others. When self-regulation is developed through the feedback process, students will positively receive feedback and criticism. In other words, this paper contributes to the existing literature by highlighting the fact that a possible relationship exists between self-regulation and accepting the viewpoints of others.

Formative experience

The qualitative analysis of this PhD research revealed another factor influencing student responses to self-regulated learning in PBL: formative experiences. In Saudi Arabia, pre-university education, in intermediate and high schools, is teacher centred with no self-directness or regulation. A tutor highlighted that it is challenging for students to encounter an entirely new student-centred learning system that requires them to be an active player in their development.

With regard to the feedback process, the findings highlighted that student responses to corrective feedback are often negative, which was attributed to the minimal experiences students have with

receiving feedback. As discussed by others, feedback in teacher-centred education is often interpreted as a final judgment, which means that the students are more sensitive to corrective feedback. A student confirmed that feedback is a new experience, and, as such, negative feedback is often interpreted as an insult. What made it worse in this case was that the medical students tend to be a high achieving group during high school, so negative feedback was unexpected and an unwelcome experience.

Existing PBL literature has pointed out the importance of educating students and preparing them for the PBL educational experience. In the Saudi Arabian context, PBL literature has reported shortcomings in preparing students for the learning environment. Al-Dayel et al. (2019) found that only 26.3% of students agreed that proper training was available for PBL sessions, which may explain why only 28.9% of students found PBL to be a better educational environment. Furthermore, Alharthi et al. (2020) found that students have an insufficient understanding of PBL concepts and made a distinction between PBL philosophy and traditional educational methods. Moreover, more than 50% of students in a study by Al-Drees et al. (2015) believed that, for the PBL sessions, shortcomings exist for training and orientation.

Comparing the findings of this PhD research with those of other studies (Al-Drees et al., 2015; Al-Dayel et al., 2019; Alharthi et al., 2020) confirms the idea that students in PBL Saudi medical schools face challenges due to being in a new educational system, and, as such, they require proper orientation. Since student-centred education and self-regulated learning have different features and philosophies (compared to traditional education), students should be inducted into PBL concepts before beginning their studies. The current research provides further evidence for the importance of PBL and feedback orientation. Feedback in PBL is a constructive scaffolding tool that facilitates self-regulation and should not, therefore, be perceived as a negative experience by the learner. The present paper also highlighted that the students in question, especially female students, were the highest achievers in their high schools, which means that they have little experience encountering challenges when enrolling in active learning and receiving negative feedback.

9.4.3 School System

Students indicated that there were some tutors did not give feedback until asked by students to give. In the other side, tutors described a factor behind this varied experience between tutors that tutors are not asked by the committee (school system) to give feedback until the students seek it.

Thus, this may explain why not all students feel all tutors are forthcoming with feedback. This is not good practice based on the feedback literature, but the feedback literature itself may or may not have touched on schools' systems and processes. While previous research has focused on the good practice of feedback, this research project contributed an explanation that feedback experience could be influenced by the school system and processes.

9.4.4 Speciality of Tutor

A PBL tutorial consists of two active stakeholders: the small group of students and facilitator. Students aim to solve a problem written as a case study through active discussion and brainstorming. The main role of the facilitator is to facilitate discussion by helping students to achieve intended learning outcomes. The facilitator is often an expert in the subject at hand, but this is not always the case. The data shows whether or not the facilitator is an expert can influence the feedback process.

The analysis of the focus groups and interviews revealed that an expert tutor can provide high-quality feedback; when asked about satisfying and high-quality feedback, students answered that it is possible when the tutor is a content expert. This is because a tutor with expertise in a particular subject will be aware of the incorrect and correct elements of the discussion. Giving high-quality feedback requires an understanding of the student's level of performance. In other words, it requires the ability/awareness to tell students about the good and negative aspects of their work. Without this awareness, students can incorrectly discuss a case without being corrected by tutor feedback. A tutor confirmed that, when the case study is within her speciality, she can further guide students if they miss important points.

This finding builds on existing evidence, and it is consistent with previous publications (Schoenfeld, 1998; Himelo-silver and Barrows, 2006; Perera et al., 2008; Mubuuke et al., 2016a; Mubuuke et al., 2016b; Mubuuke et al., 2017; Alfehaid et al., 2018). Schoenfeld (1998) made a comparison between a novice tutor (i.e. non content expert) and an expert tutor, finding the latter to enhance productive discussion and reflective thinking among the PBL group members. Himelo-Silver and Barrows (2006)

observed that an expert PBL facilitator can successfully implement several effective facilitation strategies, such as modelling and scaffolding. In addition, students perceive that tutor feedback should be comprehensive and involve knowledge aspects and non-cognitive skills among PBL members (Mubuuke et al., 2016a). Some argue that a non-expert tutor would not able to give useful feedback on knowledge that would enhance students' learning (Mubuuke et al., 2016b). With respect to self-regulated learning, Mobuuke et al. (2017) found that expert tutors are better at scaffolding self-regulated learning, since they enhance the activation of prior student knowledge. Because of their expertise, they are 'able to invoke what students already know so that newly acquired knowledge builds on what is already known' (Mobuuke et al., 2017, p. 35). Moreover, in the Saudi medical education context, Alfehaid et al. (2018) suggested that students can often perceive non-expert tutors as being unable to provide detailed feedback.

The present research and Mubuuke et al.'s (2017) findings suggest that tutors are better to be a content expert to offer an effective scaffolding process for self-regulated learning in Saudi PBL medical schools. By re-visiting the principle of ZPD, an active learner will reach a more advanced level of knowledge if they are supported by a tutor with advanced knowledge (Vygotsky, 1978). Therefore, an expert tutor plays a vital role in facilitating PBL group members and enhancing student learning and self-regulation skills through the feedback process in Saudi PBL medical schools.

9.4.5 Tutor Communication Skills

A group of student participants stated that the most basic required element in a tutor is having the skill to know how feedback should be given. Feedback quality is influenced by how it is given. As explained in Chapter 6, students suggested strategies to provide feedback, such as the sandwich technique and the first-person speaker technique. Poor communication skills in tutors are a barrier to delivering high-quality feedback.

This finding is consistent with previous studies. Eladi et al. (2018) found that, in some students' opinions, not all faculty members are skilful in giving feedback, and further training is needed to enhance tutor abilities. In addition, according to Alhaqwi et al. (2012), 47% of students perceive that faculty has developmental needs with respect to feedback skills. Another Saudi study revealed student dissatisfaction with poor tutor communication skills (Alfehaid et al., 2018). The participants highlighted that some tutors compare the performance levels of students between each other, which

negatively affects student self-confidence and can cause unnecessary competition between group members.

This factor is also related to the humanism theory of learning. According to Maslow's (1954) hierarchy, humans need basic physiological elements, such as air and water, as well as advanced psychological elements, such as self-esteem. Feedback plays a crucial role in helping students recognise their strengths, which, in turn, is beneficial for their self-esteem. If a tutor has poor communication with their students and delivers negative feedback, then it could negatively influence students' self-esteem.

This humanist view of learning is also related to self-directed learning. Merriam et al. (2007) classified self-directed learning as human growth: the human (learner) grows to the level of being an adult who can self-direct the learning process. Without reaching that humanist psychological level (i.e. self-esteem), students may not feel confident enough to be adult and self-directed learner.

Thus, tutor communication skills play a crucial role in the feedback process, as suggested in the present research and previous studies. In the context of Saudi PBL environment, this factor (i.e. tutor communication skills) play a crucial role to foster students' growth to the advanced level of self-regulation.

9.4.6 Tutor Age

Students from different focus groups expressed that they prefer a tutor of a short age gap, i.e. juniors or teaching assistants. This is because a small age gap can ensure a rapport between students and tutors and create a friendly environment with an easy feedback process. Older tutors, according to the students, can be intimidating.

There is a lack of PBL research investigating this factor, especially in the Saudi medical context, but two Saudi medical research papers (not based on the PBL school) have examined this (Al-Wassia et al. 2015; Alfehaid et al 2018). The results of this paper are consistent with the study conducted by Al-Wassia et al. (2015). They found that 69% of students are afraid of discussing feedback with faculty members, especially senior members. Al-Wassia et al. (2015) related this barrier to the hierarchy and power effect that senior faculty members potentially have. However, this was different from Alfehaid's et al., (2018) result as they found that students prefer the feedback from tutors with higher academic level.

Accordingly, it is evident that a consensus is yet to be reached concerning the influence of tutor age on the feedback process. The present study provides further evidence that students in a Saudi cultural

environment may view tutors who occupy high academic positions as intimidating. This study contributed further confirmation that this factor is relevant in the PBL setting, too. The PBL setting is different from others, as it is based on active student–tutor discussion, which enhances self-directed learning; in this circumstance, feedback plays a crucial role in developing learning. Therefore, feedback given by an assistant teacher can possibly result in better outcomes for self-directed learning skills.

Again, humanism theory can be re-visited here, as Maslow's (1954) hierarchy of needs contains 'safety needs' as the second-most basic need. Based on this PBL feedback research, students often feel safer with a junior tutor than a senior one, which, in turn, creates a friendly environment.

9.4.7 The Physical Location

According to students, feedback is often influenced by the environment that learning takes place in. Most participants do not prefer to receive feedback in front of their peers, but some do not find it problematic. Most students find public feedback embarrassing, which can result in them being defensive, as explained in Chapter 6, instead of responding positively. This result is consistent with paper based on similar cultural background (Alfehaid et al., 2018) and also a paper based on different cultural background (Mubuuke et al., 2016b) to the present PhD research. They also suggest that students do not prefer to receive negative feedback in a public environment. This confirms the idea that this factor is not limited to a specific cultural context; however, it could be worse in one culture compared to another. As discussed previously in this thesis, the student participants are not accustomed to working in small groups, so giving negative public feedback could act as a further barrier to fostering active student involvement.

While previous research has focused on the influence of public feedback from tutors, this PhD research demonstrates that this factor can also influence peer feedback. Instead of giving authentic peer feedback, students stated that peers are reluctant to give honest feedback within the tutorial group. As explained in Chapter 6, there are two reasons for this negative experience: avoiding interpersonal problems and avoiding tutor assessment.

9.4.8 Feedback Mode

This research investigated student experiences of feedback modes by analysing quantitative and qualitative data. Students reported greater preference for the verbal face-to-face mode than the written mode. In addition, the questionnaire analysis revealed that a comprehensive experience of both modes, receiving verbal and written feedbacks, ensures optimal feedback quality. Furthermore, the student and tutor interviews highlighted the advantages of both modes, though the verbal mode was the most preferred. Verbal face-to-face feedback is better for fostering dialogue between students and tutors and ensuring that the students understand the feedback provided to them, especially for negative feedback. In addition, this mode is better for emotional reasons (Chapters 6–9). Alternatively, written feedback is better for reference and reflection. In addition, the questionnaire analysis revealed that negative feedback is less frequently given in a verbal mode, which is to say that the written mode is advantageous for student improvement as tutors are more open to giving negative feedback with written mode. Thus, the comprehensive mode of feedback, giving students both verbal and written feedback, may be the best choice for the feedback experience in PBL.

The existing PBL literature has examined feedback modes, the results of which are largely consistent with the present study. In particular, the results of the present study are consistent with the study conducted by Medina et al. (2013), who found more positive changes in groups that received both feedback modes compared to groups whose feedback was limited to the written mode. Furthermore, Perera et al. (2008) found that 85% of students prefer the comprehensive experience of both feedback modes.

In addition, as mentioned above, student quantitative reports revealed that less negative feedback is given in the verbal mode, and students in another study (Eladi et al., 2013) commented that it is better to give negative feedback to the tutor through the written mode instead of the verbal mode, since the latter is difficult. Although this paper (Eladi et al., 2013) concerned feedback from the student to the tutor, which is different from the interest of the present PhD research, there is a general agreement that giving corrective comments can be difficult in the verbal face-to-face mode.

In contrast, this PhD research finding is inconsistent with other research. While the present study found that written feedback has some advantages, Parikh et al. (2001) found the opposite that written feedback was ‘never reported helpful’. Also, the Saudi PBL study by Alhaqwi et al. (2012) found that written feedback is preferred by students over verbal feedback which is opposite of what this PhD research found.

However, the present research builds on existing evidence that providing both feedback modes can result in benefits: the benefits of dialogue by the verbal mode and facilitated reflection through the written mode. While previous research examined students' viewpoints through a quantitative approach, especially in the Saudi context, this PhD was based on a mixed study of tutors and students, thereby contributing a clearer understanding of the reasons behind this preference. For example, students discussed the advantages of the verbal mode; namely, that negotiation to reach agreement is only possible with verbal feedback. This advantage is a supportive factor for the PBL learning environment, which is based on student-centred learning. The learners in this environment are expected to be adult learners. Maslow (1984) discussed the principles of adult learning and pointed out that adult learners are internally motivated, not externally. Regarding the feedback process in PBL, the verbal negotiation between a student and a tutor is a supportive process that helps students become aware of weaknesses and shortcomings, which, in turn, positively enhances internal motivations to change. This positive outcome might be not possible if the feedback is delivered one way, i.e. from tutor to student without a dialogue.

A newly published study was conducted in Saudi PBL medical school to examine students' experience of verbal bidirectional feedback. Through questionnaires, Saeed et al. (2020) found that the bidirectional verbal feedback helped to communicate important aspects (purposes) of feedback such as suggesting improvement plan. This finding is consistent with this PhD project findings; however, the latter contributed, through applying mixed methods, a deeper exploration of potential influential factors behind feedback experience.

The present research contributes to the existing literature by pointing out that verbal feedback in Saudi Arabia has cultural-linguistic benefits. As explained in Chapter 7, medical students in Saudi Arabia learn in English, which is their second language. Since the written feedback is a formal process, it is always provided in English, which is a potential barrier to understanding the tutor's messages. Verbal feedback is not as formal, and Arabic is often used. Furthermore, another linguistic benefit is that, for the verbal mode, body language has a crucial emotional effect on the feedback recipient.

9.4.9 Feedback Source: Peer Feedback

Identifying student preference for feedback source can help with future practice development. The present study found that a large proportion of students prefer both tutor and peer feedback (58.5%); however, 38% of students do not prefer peer feedback. Qualitative analysis revealed some key factors

behind these percentages. Peers have some advantages related to their position in the learning process (see Chapter 6). For instance, peers have better insight of each other's progress, since they have prior existing relationships. This means that peer feedback is more individualised for student needs. Alternatively, peer feedback has problems in terms of authenticity, hierarchy and expertise (see Chapter 6).

These findings are similar to previous research. In particular, it is consistent with the study conducted by Parikh et al. (2001), who found that both sources of feedback, i.e. tutor and peer, are favoured by students, but they slightly prefer tutor feedback. Although tutor feedback is the most preferred source, these consistent findings possibly confirm that peer feedback in PBL is a preferred feedback source. In the context of the Gulf countries, Tayem et al. (2015) found that peer assessment leads to improved performances, such as attendance and collaboration. Although this PhD research did not investigate which specific performance is improved by peer feedback, it qualitatively contributes to a clearer understanding as to why peers are different from tutors and the advantages of such feedback.

According to Papenczak et al. (2007) and Alfehaid et al. (2018), peer feedback is effective in judging student performances due to their knowledge of each other. The present research contributed another related factor, which is that peers can better assess how a student presents new knowledge. As explained in Chapter 6, when a student gives a presentation, their peers are the best people to assess related skills. Because the peers are not experts, they would be able to judge how skilled a presenter is at explaining new knowledge. As expert tutors are not effective in this; thus, peer feedback is crucial here.

In contrast, peer feedback was not always preferred. Students felt uncomfortable giving corrective feedback in front of other PBL tutorial members, as they perceive, it can be negatively interpreted as an insult. The competitive environment of medical schools results in peer feedback being a difficult process. This is consistent with the results obtained by Alfehaid et al. (2018), who conducted research in a non-PBL Saudi context, which further confirms the influence of culture and learning environment on the peer feedback process.

The PBL environment should be more collaborative and less competitive than traditional learning environments, so PBL tutorial members (i.e. peers) should be further educated about that aspect of PBL environment.

This present PhD research found friendship as a positive influencing factor that could reduce the competitive and negative feeling while practicing peer feedback. However, this finding is inconsistent

with the study by Papenczak et al. (2007), who found that friendship negatively influences the authenticity of peer assessment. Alternatively, it is consistent with Chou et al., (2013) who found that peers with a prior relationship give better corrective feedback that enhances communication skills.

The present research contributes to the existing literature by providing a clearer understanding of how a close relationship enhances awareness of weaknesses. In other words, when the feedback giver has a closer relationship with the feedback receiver, he/she can give useful comments that will help the feedback receiver's development. This level of relationship creates a safe environment for giving negative peer feedback. As explained previously, peers are not worried about how their friends will react to their feedback, because the trust factor ensures it is positively interpreted. This crucial finding (the close peers relationship) may improve future peer feedback practice.

In conclusion, the present research identified crucial factors that influence the feedback process in Saudi medical PBL schools. It contributes to the existing literature by providing insights into student experiences of feedback, especially in the cultural context of Saudi Arabia. The influence of culture and the learning environment are supported by learning paradigms and previously published literature. By comparing the findings with the existing literature, self-regulated learning and formative experiences were identified as factors influencing how students face challenges in applying and practising the feedback process when the learning process is student-centred. This is also related to other factors, such as feedback mode and source. Awareness of these factors can positively support future feedback practices in PBL medical schools, especially in Saudi Arabia.

9.5 Strengths and Limitations

9.5.1 Strengths

The present research has four key strengths. The first is it specifies a research question addressing a gap in current knowledge. This is to explore the factors that particularly influence the feedback process in Saudi PBL medical schools. Although existing research extensively covers good feedback practices, there is a lack of research investigating the factors that influence the quality of feedback within PBL settings. This is especially true within Saudi Arabian educational environments, which have unique considerations, such as segregated learning environments for males and females and a tutor-centred approach to learning. Thus, the main contribution and strengths of this research are the development of a piece of work and conceptual framework that reflect the cultural context of Saudi PBL medical schools, as opposed to adapting externally developed ones.

There are some instances where this research does not necessarily conform to mainstream thinking around the best feedback practice in PBL. For example, there is a culture specific hierarchal effect on the student-tutor dialogue, especially with senior tutors. Also, giving public peer and tutor feedback is perceived by students as offensive. In addition, medical students in Saudi culture are influenced by their formative experience in high school where education is totally teacher-centred. This may make the Saudi medical education culture different to others. This is supported by the Southern theory. Current knowledge application is dominated by Western literature whereas the Saudi PBL context deserves special investigation, and this project addresses this.

Second, a mixed method approach was taken by implementing both quantitative and qualitative methods. Each method has limitations when adopted on its own. For instance, quantitative studies do not provide a deep understanding of complex experiences, whereas qualitative studies often lack generalisable results because the sample size is restricted. However, since the present study used both methods, it provides a comprehensive understanding of the feedback process and influencing factors for a PBL context. For instance, in the present paper, 855 medical students reported that tutor feedback is preferred over peer feedback. Because of the mixed methods used in this study, the further qualitative investigation provided deeper understanding of why this is the case. This approach is very rarely adopted in Saudi PBL medical education literature, as quantitative research is frequently used instead. Accordingly, the present paper contributes to the existing literature by providing insights into student and tutor perceptions.

Third, instead of targeting one stakeholder, i.e. students, this study sought the opinions of students and tutors, by which triangulation was achieved. In addition, identifying the disparities between the two stakeholders' perceptions helped the researcher to draw a picture of how different stakeholders interpret the real experience. This can help future educators to close the gap between different perceptions and achieve satisfying feedback practice for the two stakeholders. For instance, both students and tutors agree that expertise (in tutor feedback) is necessary for optimal feedback. This is because expert tutors are more aware of the quality of student discussion; one tutor stated that she would further question students and guide them if they stray away from the topic (if the case problem is within her speciality). In addition, by investigating both stakeholders' perceptions, inconsistencies were identified. Some tutors believe that students should be self-regulated; however, most students seek out feedback and guidance from tutors to develop their self-regulation skills.

Fourth, the student participants were interviewed by the researcher without the inclusion of a third party. This enhances data analysis accuracy. The researcher and participants speak the same language

and share the same culture, which was conducive to obtaining detailed information from the students. In addition, the researcher is not associated with student assessments or tutor evaluations, nor he is in a position of authority that would have the potential to make the participants hesitate or fear to speak about their real perceptions. This ensured a safe research environment where students and tutors could discuss sensitive information, such as dissatisfaction about the school administration process and the negative behaviour of some tutors.

9.5.2 Limitations

This study is not without limitations. These potential limitations can be divided into three sub-themes: research objectives, and limitations within the quantitative process and limitations within the qualitative process.

The study objectives

This study explored student and tutor perceptions of the feedback process in PBL. Unfortunately, this study was limited to examining the first three years of medical school (pre-clinical), which is to say it excluded the clinical stage. Although PBL tutorials are frequently conducted in pre-clinical academic years, clinical students may identify different influencing factors of quality of feedback. Future research should examine the feedback process for PBL clinical education in relevant learning environments including hospital environments.

The key contribution of the present study is that it revealed factors that can influence the feedback process in PBL. A key example is how the PBL environment, with aspirations to be a self-regulated learning environment, influences student interpretations of the feedback process. However, it did not investigate the opposite process: how the feedback enhances/scaffolds self-regulated learning.

Culturally, this study is limited to Saudi Arabian medical schools, and, as such, the results are not generalisable to other countries.

The quantitative stage

The questionnaire enquiry process has some limitations. This study investigated both stakeholder perceptions; however, this was only the case for the qualitative inquiry. Although this was not a barrier

to achieving the research aims, which involve examining student and tutor perceptions by triangulation, the quantitative statistics were limited to student reports. Including the tutors in the quantitative stage may have revealed further inconsistencies in between perceptions of the different stakeholders.

Moreover, in the questionnaire, different independent variables were tested to explore differences and correlations, such as the difference between genders and the correlation between academic year and the feedback experience. However, this research did not explore whether there is a relationship between perceptions of feedback and students' performance as can be reflected by their Grade Point Average (GPA). As presented in Chapter 5, there are variable statistical findings related to the quality of the received feedback. For instance, only 18% of students reported shortcomings in receiving corrective feedback, so most of the participants believed that feedback is frequently given. Examining student performance (by asking for GPA) could have revealed a possible correlation between perceptions of feedback and students' performance; for instance, students with low grades could hold tutors responsible for not providing enough supportive feedback.

In addition, in the quantitative stage of this research, students were only asked how they experienced the feedback process, not what they expected. To illustrate that, students were asked how much they are told how to do better, but they were not asked if that feedback (i.e. telling how to do better) is expected and seen as an important feedback. The quantitative analysis did not specifically explore a mismatch between students expectations of what quality of feedback is and the reality. Instead, the quantitative analysis only examined the latter (i.e. the reality).

The qualitative stage

In organising the focus groups, the researcher faced difficulties with respect to student readiness and discussion. For instance, some students had busy schedules and the researcher had to work around their timetables. This also limited the session time, which could have affected the study results, albeit minimally, as the researcher had to set a limited time for each question, which, in turn, affected the students' ability to express themselves regarding the feedback process. In addition, at some of the focus groups, the researcher was unable to ask all of the planned questions due to limited time availability.

Researcher bias

Another possible limitation is the researcher's possible bias in data interpretation. Students and tutors freely discussed their perceptions in responding to the researcher's semi-structured questions, which might have been falsely interpreted due to researcher bias. This is because the researcher conducted the interviews and focus groups with prior expectations of the feedback process in Saudi medical schools. However, this limitation was minimised as much as possible. For instance, the researcher ensured that he had a correct understanding of the participants' perceptions by requesting that they clarified their answers, also, by summarising the participants' ideas. Furthermore, the researcher transcribed participant response verbatim and discussed the transcriptions with the supervisors to facilitate reflexivity in the process.

Translating the transcripts was also potentially influenced by researcher bias. It was a challenge to collect the qualitative data in the Arabic language and present it in a different one, i.e. English (Temple and Young, 2004); the main challenge in this process was to translate the Arabic transcripts without altering the meaning. According to Bryman and Bell (2007), translating text from one language to another may cause the meaning to be lost because, in such a culture, words may have different meanings. Therefore, translation validity in qualitative research is critical, and words (in the translation process) should be carefully chosen to represent the participants' intended meaning. It is not as simple as looking for synonyms, but it is constructing meaning based on participants' dialogue (Simon, 1996). Also, translating one language to another needs a deep understanding and awareness of the sociocultural context in which the qualitative data is collected, as that helps the researcher to fully grasp the participants' intended meaning (Abalkhail, 2018).

In this PhD research paper, the researcher followed the best possible practice to translate the original Arabic transcripts to make them understandable to an English-speaking audience, without losing their original intended meaning. That was the practice the researcher followed in the translation process, instead of merely using synonyms that may have negatively influenced the translation validity. To illustrate, students frequently mentioned an Arabic word '*أسلوب*' when talking about the competence of the feedback giver. A simple search for that word in dictionary leads to English words such as 'style' and 'method', which are not related to the students' intended meaning. Rather, they were discussing the communication skills of the feedback giver.

An awareness of the participants' culture, i.e. Arabic, which the researcher shares, helped the latter to realise what exactly the students meant. Another example is what students called '*مجاملة*', which is also a culturally embedded term. It simply means (in the feedback process) giving only positive

feedback and ignoring any performance that may need to be better while taking into account the feelings of the receiver, since negative feedback may not be welcome. Based on the awareness of this cultural term and the discussion with the supervisory team, 'feedback authenticity' was determined to be the most accurate and valid translation of that Arabic term.

In addition to the awareness of the Saudi Arabic socio-culture, peer debriefing was another process employed to support the validity of the translation process. As mentioned above, the supervisory team was involved in discussing the best representative English translation. Also, an external Arabic native speaker, who is fluent in both languages, was involved in the translation process. This peer debriefing enhances the credibility, confirmability and dependability of the translated data. Thus, the researcher tried as much as possible to produce a valid translation.

Chapter 10: Conclusion, Recommendations and Reflection

10.1 Conclusion

The PBL curriculum is currently used in Saudi and global medical education. This learning approach is centred on students, and feedback is a critical process that enhances all learning processes including PBL. Accordingly, the present research investigated the feedback process within PBL opportunities in the Saudi medical school context with the aim of developing recommendations that are aligned with the local contexts to ensure best practice. It is expected that enhancing the feedback experience will in turn support self-regulated and motivated learners.

Students' and tutors' perceptions of the feedback process in Saudi PBL medical schools was explored. In particular, the experiences of both in communicating different feedback modes, i.e. written vs. verbal face-to-face feedback, and feedback sources, i.e. tutor vs. peer was investigated. Through this process, vital factors that can influence feedback quality were identified.

Overall, both stakeholders believe in the importance of feedback in the PBL curriculum; however, students and tutors have different expectations. Students reported shortcomings in receiving certain feedback elements. For example, many students claimed that they never or rarely have the feedback explained to them as to why their performance was assessed as either positive or negative, i.e. what caused the success and failure; they are also rarely informed of how to improve.

Different potential factors were found to influence the feedback process in PBL. These factors are mostly related to learning environment, culture, feedback mode and feedback source.

Culture is found as a factor influencing students' responses to the feedback, particularly how students perceive the concept of feedback. Data shows that feedback could be negatively perceived as "insult". Also, similar cultural background between the tutor and students ensures a friendly environment for feedback. This similarity created an easy process of feedback using Arabic language, which deliver a deep process of feedback such as to explain for students why such performance is wrong or right and how to do better.

Since PBL is student centred and based on self-regulated learning, students who believe in this philosophy are more receptive to feedback. However, these mature receivers of the feedback are not easily created. Students encounter challenges when moving from traditional high school education, which is based on a teacher-centred approach. Formative experience prior to medical school did not have sufficient emphasis on active learning and how to facilitate this through the feedback process.

This influences how students respond and react to feedback. They often expect that tutors should always initiate the feedback and inform students on how to improve. However, the tutors do not share this belief, as they believe that such aspects should be left to student self-reflection. Interestingly, the comprehensive experience that combines students' self-regulated learning and essential tutor facilitation, known as scaffolding, was found to be suggested by some respondents. As discussed, the process of scaffolding has been recommended in the existing literature.

Furthermore, tutor-related factors can also affect the feedback process. In particular, tutor expertise and appropriate age create an optimal learning environment for the feedback process. As explained previously, expert tutors can provide comprehensive feedback. In addition, a short age gap between tutors and students creates a suitable and safe environment for feedback. Senior tutors are seen as intimidating and can create fear in some students with respect to discussing feedback.

The quality of feedback is influenced by the mode, i.e. written or verbal. The quantitative analysis revealed that students prefer the verbal form, while the best feedback experience can be achieved by providing both forms of feedback. The qualitative analysis explained further the factors behind these quantitative results. Open dialogue and language-related factors are the most important reasons for the preference towards verbal feedback. A combined approach is the best since the written and verbal modes have their own unique strengths, such as referencing for the former.

Peer feedback is an active process in some medical PBL schools. Peer feedback is preferred by most of the participants. It is preferred because the students often have close relationships and are aware of each other's progress. However, roughly one-third of participants prefer only tutor feedback. Peer feedback is disadvantageous insofar as it is often inauthentic, and peers are perceived to lack the expertise of tutors. Practising peer feedback within the tutorial group discussion has a clear negative effect on the feedback authenticity, i.e. peers only give positive feedback and avoid commenting on negative aspect of performance.

This paper contributes to the existing literature in a number of ways. Many studies have examined feedback quality and the reception of medical students to feedback, whereas the present paper examined the factors that influence the feedback process, more specifically in Saudi medical PBL. Feedback experience is influenced by students' former and prior experience, where learning is mostly centred on teacher and without feedback. They face challenges when they are required to self-regulate and self-reflect in the feedback process in medical school. More importantly, culture related factors influence the feedback process, and successful curriculum change requires awareness of local culture and content. These conclusions support the standpoint of the Southern theory.

10.2 Recommendations for Further Research

This work has identified a number of opportunities to develop further work. First, further research is recommended to explore how PBL students experience the feedback process in clinical settings. It is crucial to identify how PBL students in Saudi medical schools develop the skills of self-regulation and self-reflection, as well as how they apply such skills at advanced levels, such as during clinical rotations.

Second, this research is based on the cultural context of Saudi Arabia. One of the findings is that language similarity between the two stakeholders has a positive effect on the feedback process, specifically using Arabic language for verbal dialogue. Future research on other cultural contexts embedding PBL should consider cultural context as a key factor.

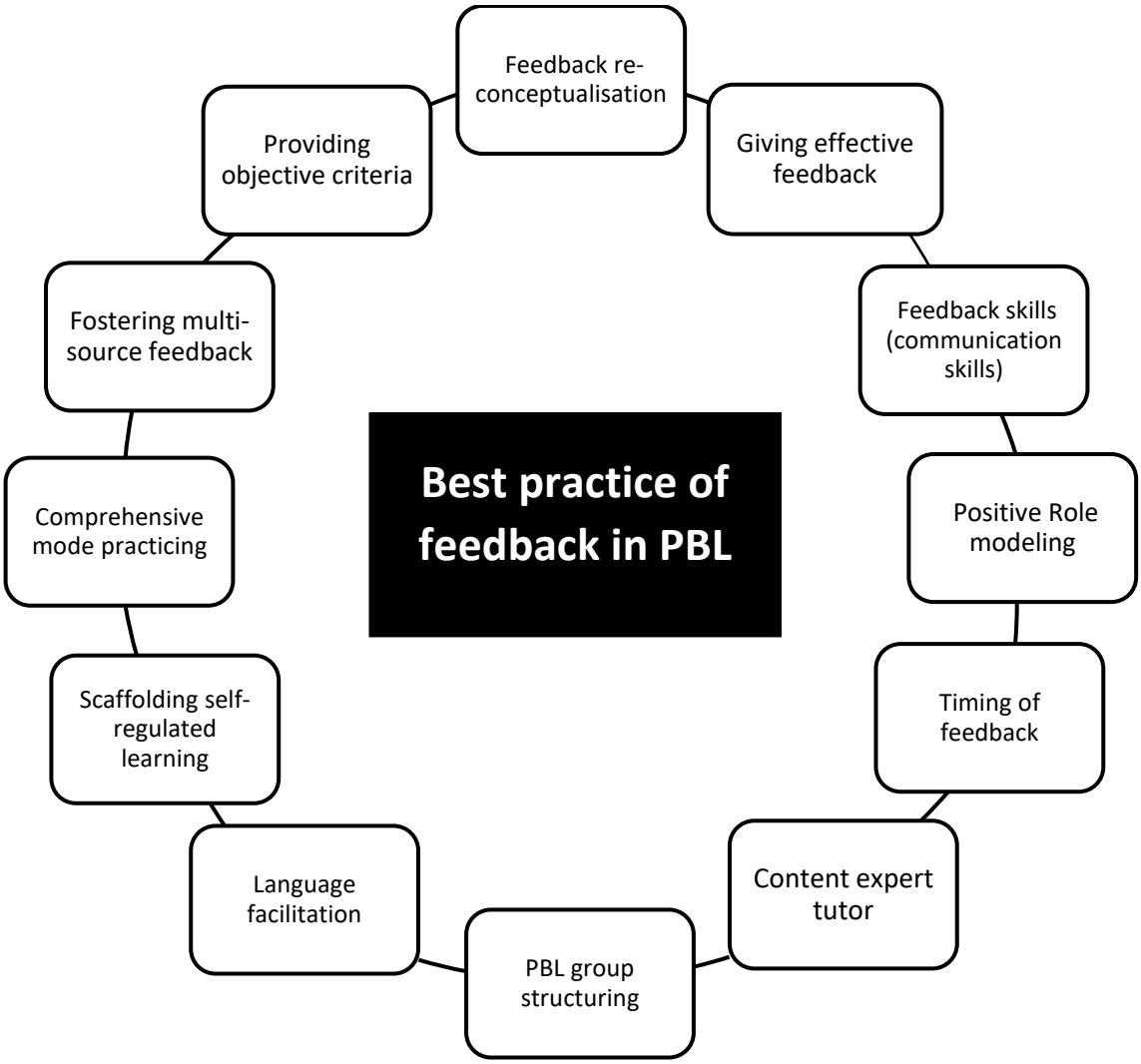
Furthermore, this research found that students have variable perceptions concerning feedback experience. For example, roughly one-fifth of the students reported shortcomings in the receiving corrective feedback that informs them of what needs improving in their performance. Future research could include the additional variable of student performance, e.g., grade point average (GPA), to identify potential correlations between student satisfaction and performance. This may help to unpick what influence feedback experience may have on student performance and development.

The quantitative analysis was limited to receiving qualified feedback. Further research is recommended to include how students perceive certain feedback types. For instance, the qualitative analysis in the present research revealed that a few students do not prefer to be told how to improve. Instead, they prefer to be self-regulated and self-reflective without tutor help. Investigating expectations and reality through future research, could show how well they match, especially in Saudi medical education where PBL research is rarely the focus of further development.

10.3 Implications for Medical Schools

This thesis identified factors that influence the feedback process in PBL setting in Saudi medical schools. This finding may help policymakers to enhance future practices by considering the influencing factors, especially for Saudi medical school PBL curricula. Here I describe some key recommendations derived from this research thesis that can support developing good practice. These recommendations are designed as a conceptual framework (model), see Diagram 10.1. This Diagram is further discussed in the rest of this chapter.

Diagram 10.1 Conceptual framework (model) to practice feedback in PBL



Feedback Re-conceptualisation

It is a crucial step to ensure that training for both stakeholders on the concept of feedback, its importance and the expected process, is considered by policymakers. Students should be aware of the fact that feedback is a constructive process and important for their development. Tutors should be encouraged to ensure that students are aware of and internally motivated for the feedback process. Seeking and receiving feedback are enhanced by internal motivation to practice the feedback. Also, tutors should be aware of how vital feedback is in a PBL context, especially PBL tutors new to PBL

ethos. The researcher (of this PhD research) plans to work with policymakers, such as the Dean, to implement this in his school.

Giving Effective Feedback

PBL educators are advised to give effective feedback that involves both aspects of students' performance, i.e. positive and negative. In other words, students need to know what exactly went well and what needs to be better. Also, it is a crucial part of the feedback that explains why such a performance is wrong or right.

Moreover, they need to be aware of positive outcomes when performance improves, especially for future career development. Furthermore, beginner students need to know how to do better. Saudi students are not well prepared to be self-regulated, so tutors are advised to gradually support students in this aspect of learning by scaffolding. Also, a follow-up process, where tutors ensure that students successfully achieved the required level of performance, is advised.

Feedback Skills (Communication Skills)

Feedback givers, both tutors and peers, should be well-trained in essential feedback skills. In addition, using 'first speaker' language (e.g. "if I am in your place, I would do… to develop myself") is a feedback communication skill that can enhance feedback receptiveness.

Positive Role Modelling of the Feedback Practice

Tutors are seen by students as being role models in the education process. If tutors are well trained and optimal tutor feedback practice is ensured, peers (as givers) would be positively influenced to apply the same quality of practices.

Timing of Feedback

Timing of feedback plays a crucial role in the feedback experience. Policymakers are advised to organise timed schedules for the feedback discussion between tutor and students and between peers themselves. These scheduled meetings should be appropriately timed to ensure that students work toward their development effectively.

PBL Group Structuring

Policymakers are advised to consider the process of PBL group structuring. Medical school processes should facilitate that PBL group students get to know each other within the group and establish a rapport to enhance the feedback process. In addition, tutors should be aware of the students' history.

This can be achieved when a tutor has prolonged contact with students. Another crucial factor is that tutors should be experts in both knowledge and behavioural aspects.

Language (culture)

Language is a crucial influencing factor. Cultural similarity between students and tutors enhances feedback quality in PBL. For Saudi medical education, there are two challenging factors: formal language for education is English (a second language) and there are many foreign tutors who do not speak the students' first language (i.e. Arabic). Policymakers should consider nominating Arabic tutors to facilitate juniors (i.e. first- and second-year students) in PBL tutorials, so detailed feedback with scaffolding could be given for beginner learners. Alternative strategy is to appoint a committee of Arabic tutors, who can further discuss the feedback (when the formal tutor is not an Arabic speaker) with students.

Development of Self-Regulated Learning Skills

PBL medical school educators are trained to gradually prepare students for self-regulated learning. For feedback, they should cooperatively work with junior students to suggest development plans that are balanced between tutor facilitation and student self-refection (i.e. scaffolding).

Mode of Feedback

Feedback can be either verbal face-to-face communication or in written form. Although verbal feedback is preferred more than written feedback, medical schools are advised to implement both modes to provide comprehensive experience. Verbal feedback creates a positive environment for students and tutors to discuss the feedback, which, in turn, would lead to positive learning outcomes, especially for self-regulated learning skills. Written feedback is beneficial for the student's self-reflection process.

Multi-source feedback

In addition to tutor feedback, PBL medical schools are advised to implement peer feedback and assessment. To ensure optimal peer feedback experience, some practical issues must be considered. To ensure feedback authenticity, educators should provide peers with objective criteria that students can use as a guide when giving feedback. In addition, it is crucial to assign groups of peers who have close relationships to enhance feedback authenticity. Furthermore, the authenticity of peer feedback can be further enhanced by providing peer feedback privately, as public feedback can negatively affect the authenticity. Also, the authenticity can be enhanced by providing peers with assessment criteria to use to structure peer feedback.

10.4 Reflection

10.4.1 Introduction

I have spent just over four years in this PhD programme from beginning to end, and this long period has had some positive experiences and some challenges. This part of the thesis is about my reflection on the research process. I will highlight the challenges I have faced and how I reacted and responded. The sub-themes of this section reflect the chronological stages of my research process.

10.4.2 Pre-data collection period (first year)

In the first year of my PhD programme, I was required to write a literature review. I chose the topic of 'feedback in higher education' and wrote a 5,000-word structured literature review. Unfortunately, that piece of writing was not accepted, and resubmission was required. This experience of writing was my first since I started the programme, so I had mixed feelings of enthusiasm to be a PhD researcher and anxiety because this submission determines a students' ability to continue to be registered in the PhD programme. I felt disappointed when I was told the result. I did not expect it.

My first writing lacked essential academic writing skills, such as grammar, and, more importantly, critical writing. I did not show sufficient skill in critically synthesising the existing literature. Instead, my piece of writing was mainly descriptive. English is my second language, and that was one of the reasons behind this experience as I am used to reading and writing in my native language, Arabic. I found myself, when writing in English, translating Arabic to English, which negatively influenced the writing structure. Also, a critical reason behind this negative and unexpected experience was that it was my first attempt to write a paper to PhD standards, such as demonstrating high levels of critical thinking. Although I had conducted research within a master's programme, the level of critical thinking required for a PhD was at higher level.

I should have prepared myself before I started the writing process. I should have sat down with experts and native speakers to show them in advance what I had written. However, there was an opportunity to re-submit, so I created an action plan facilitated by my supervisory team. I enrolled in academic reading and writing courses. Also, I had one-to-one sessions with native speakers who further guided me in the correct practice of academic writing. Regarding critical writing, I wrote

annotated bibliographies as a learning exercise to improve my writing skills. These processes finally allowed me to pass.

10.4.3 Questionnaire piloting

I created a questionnaire and performed a piloting process, asking a group of PBL students to complete it. Then, I discussed it further with them to explore how the questionnaire could be a valid tool to collect quantitative data and answer my research questions. I was curious to know how students would respond to my questionnaire and how clearly the items were written. I felt surprised when some of them responded positively to the research topic. They expressed that they were delighted to know that someone is seeking their perceptions and viewpoints about their experiences. Also, they strongly encouraged me to follow this research further with suggestion of other research. This message gave me confidence that feedback in PBL is a vital topic that can develop students' future experiences.

This positive experience of students' enthusiasm to enrol in my study happened because they rarely find someone to listen to their perceptions and complaints. Most of the medical school-based studies are done for the purpose of clinical science; however, a social science topic such as students' and tutors' perceptions is rarely approached. Also, I felt delighted because this was the first time I had sat with students to listen to them. My prior experience with students was mainly for teaching purposes.

I have learned from this experience that medical education research is a vital process that students receive great benefit from. If medical education is well-developed, then health and clinical care will benefit as they are positively influenced by graduating excellent physicians. This positive experience made me plan to continue conducting other research that concerns students' and tutors' educational experiences, after finishing this PhD study. For example, I plan to develop project to implement and evaluate the recommendation from this project.

10.4.4 Qualitative data collection

Recruitment to the study

The qualitative stage involved both student focus groups and tutor interviews. Four medical schools were involved in this stage. Key persons in each school gave an agreement to visit their school to

conduct the interviews with students and tutors. However, when I travelled to reach the third school, unfortunately not a single male student agreed to participate. Before reaching that school, I felt confident that students would be happy to share their experience. However, their reaction made me feel disappointed. I asked the key person to contact them again, but no solution was reached with the male students, but the female students showed an interest in participating.

That unexpected experience could be attributed to the fact that medical students often have busy schedules with many sessions. However, female attitudes regarding participation at medical schools show that they are keener to share their opinions and perceptions. It would have been helpful if the key person had assessed the male students' agreement before I arrived and ensured that the environment was ready to conduct the focus groups.

This experience conveys the message for me that a researcher should expect challenges or barriers during the research process, specifically during the data collection. Because of that experience, I started to better prepare for such visits to medical schools by ensuring that the key person had already organised the meetings before I arrived. In the future, I plan to be well-prepared to avoid the feeling of disappointment if my plan does not work.

Also, at the beginning of each focus group and tutor interview, I asked the interviewee's permission to record the discussion. Most of the participants, students and tutors, agreed without hesitation. However, one tutor refused to be recorded and asked me to continue the discussion. Although it is the tutor's right to refuse, this response was not expected especially as I assured participants that the data and the tutor's identity would be protected. Although I was disappointed, I showed a complete respect for the tutor's choice. After a few minutes of the interview, she changed her mind.

There are possible negative consequences if there is no record of raw data which can affect the reliability of the analysis.

This initial refusal could be attributed to the low trust that the tutor had in the researcher. There could be a fear of how the recording could affect her job as a lecturer in a medical school. However, the positive point of this experience is my ethical response to that decision: I showed a respect for her decision, and this was a potential reason behind her late acceptance, as she felt safe, and she trusted the research process.

Although ethically I did well, I plan to be straight in respect to research ethics in future research. Participants decisions in future research will be fully respected in order to create a safe environment for the research project. This positive experience gives a message that being respectful with the participants leads to positive outcomes. I also need to be prepared for such unanticipated challenges.

Also, while I was conducting a student focus group, I asked the students about their perceptions about feedback that focuses on students' personality. A student showed disagreement about that question and said this feedback (i.e. targeting a personal aspect) should not be considered as feedback; it should be just regarded as a 'rude comment'. According to him, feedback only targets performance aspects. Because this is my research topic, I shared my own opinion that this feedback (i.e. on a personal aspect) is still considered as 'feedback'. After the discussion ended, I felt regretful and felt that I, as a researcher, should not have imposed on them my own opinion. Instead, I should have taken a facilitative approach to supportively challenge the student' perceptions.

I believe that my reaction to the students' viewpoints was caused by that fact that I know about the feedback topic in depth. That feeling of superiority was a negative factor. I acknowledge that the hierarchy factor (the difference between tutors and students in aspects of knowledge and expertise) made me refute his point and try to convince him of my point. I should have done what I am expected to do and have taken that opinion as a student's perception. I think that student still believes in his opinion, and my contribution only led to a negative consequence, taking advantage of my position as the one who has the expertise.

10.4.5 Qualitative data analysis

Immersion into the data through transcribing

I finished collecting the qualitative data, and the time came to analyse it. Transcribing the audio to written material is a vital process in the analysis. I had two choices in doing that: either by myself or with the help of others. I decided that I would take the former choice, though it would be a difficult job to transcribe 12 focus groups and most of the interviews. Due to my slow typing skills, I have spent around two to three months to finish that process. But I felt proud that I was doing my research independently, without external support.

That difficult experience led to positive consequences. A major benefit was that I made several reviews of what students and tutors were discussing. Limited typing ability caused me to listen several times to parts of the audio to type it correctly. That made me acutely aware of every single idea that the subjects were talking about.

This process of transcribing made the analysis process, specifically the thematic coding, straightforward. The advantage of the repeated reviewing and listening, meant that I could recall exactly how different perceptions represented a specific theme.

This experience carries a message for me, that difficult jobs can lead to positive outcomes, so should not necessarily be avoided. Also, being independent, especially in the PhD research process, makes learners (or researchers) feel proud of what they have done. I plan to convey the message to my future learners, whom I may facilitate, that adult learners are expected to be independent.

Finalising the results (generating the themes)

At the end of the analysis process, I reached the representative themes. I found that different people do not necessarily have a consensus belief; instead, different perceptions on one fact may exist. To illustrate that, students do not necessarily have one belief that a peer is a suitable source of feedback. They have different experiences and so have different perceptions. In addition to the feeling of pride in reaching the end of the research, I also felt a little surprised at the existence of dissonance between students on some topics.

Although I was aware of the philosophy of social constructivist theory (that belief in different facts exists due to different subjective experiences), this experience affected my conceptualisation and understanding of the real PBL experience in Saudi Arabia: different students and tutors have different beliefs. I, as the researcher, gave chances to these different beliefs. contributed to that experience. During the data collecting process, I made sure that every single participant could speak and explain the reason behind such perceptions. The skill of moderating the focus groups helped me to reach and realise different and minority perceptions.

As a researcher, this experience carries a message that social science research reveals relevant and different perceptions, and those differences could develop future practice by uncovering the influencing factors behind these different perceptions. As a lecturer, the learning environment could influence my students differently; some students might feel embarrassed when receiving corrective feedback within the PBL tutorial, so different preferences should be considered to create a suitable learning environment for every single student. Finally, as social person, I think this experience caused me listen to different people's experiences in their social lives and consider the existence of their different interpretations of one fact.

10.4.6 Writing-up process

After I finished completing the data collection and analysis, I went forward to the process of writing up. Unfortunately, social and health-related factors negatively influenced that process of writing. COVID-19 related government restrictions affected the university process. I could not go to work in my office, so I had to stay at home. Another challenge that I had was the fact that I had family, a pregnant wife and a young son who both needed special care. I contacted my government to be evacuated; however, that was not possible. Because of this unexpected experience, I felt anxious about my ability to continue writing.

Continuing writing at home was complicated to a level it made me unable to write. Thus, to overcome this problem I found the application for a leave of absence to be the only choice I had. I applied for that leave, and an acceptance was given. I found that decision (leave of absence) had positive consequences. I had time to stop writing and take care of my family, and my new baby was born during that period. Without that leave, the deadline for the PhD thesis submission would have passed, and I would have failed.

There was a process that I should have adopted and applied to avoid this unexpected issue. The deadline was in October, and my plan was to submit it just in time, i.e. at the end of September. Before COVID-19, I should have been cautious about any potential upcoming challenges that may affect the writing process. Therefore, I should have planned to finish the thesis about three months before the determined deadline. If I had done that, plenty of time would have been available for writing even though there were restrictions. In future projects, I need to time manage better and plan in unanticipated challenges.

10.4.7 Participating in international conferences

Before I started the PhD programme, I attended several conferences. I saw a lot of people participating and presenting their work, and that made me enthusiastic to participate, too. Within my PhD programme, I sent my abstract to two international conferences: AMEE 2019 and AMEE 2020. I was surprised and delighted to know that my abstract was accepted for both conferences, especially since there were a lot of abstracts that were submitted to the AMEE conferences and the selection was very challenging. I felt proud when I received an AMEE email confirming that point:

> *'We received over 3,200 abstracts which have been reviewed by three reviewers… and selection was very challenging.' (AMEE 2020)*

Having my abstract accepted within a competitive environment gave me a message that my work was a satisfactory project. I did my best to achieve that level of satisfaction. I chose a topic that is rarely investigated, i.e. how feedback in Saudi PBL schools is influenced. Also, I chose good approach methods that helped to answer my research question and reach interesting findings. It is a topic that will help develop practice at my home institution.

That experience helped me to meet great people from around the world and present my PhD research, especially at AMEE 2019 because AMEE 2020 was virtual (due to COVID-19). Also, it helped me to represent my UK university, The University of Sheffield, and my home country, the Kingdom of Saudi Arabia, as a PhD researcher. That representation made me proud.

I believe, based on this positive experience, that participating and sharing my own work either at a conference or any other means of academic communication is a great target that researchers should work for. Such opportunities help in exchanging updated knowledge, that most researchers would appreciate, and develop networks. Therefore, if I pass this PhD programme, I will continue conducting research and sharing it in future conferences.

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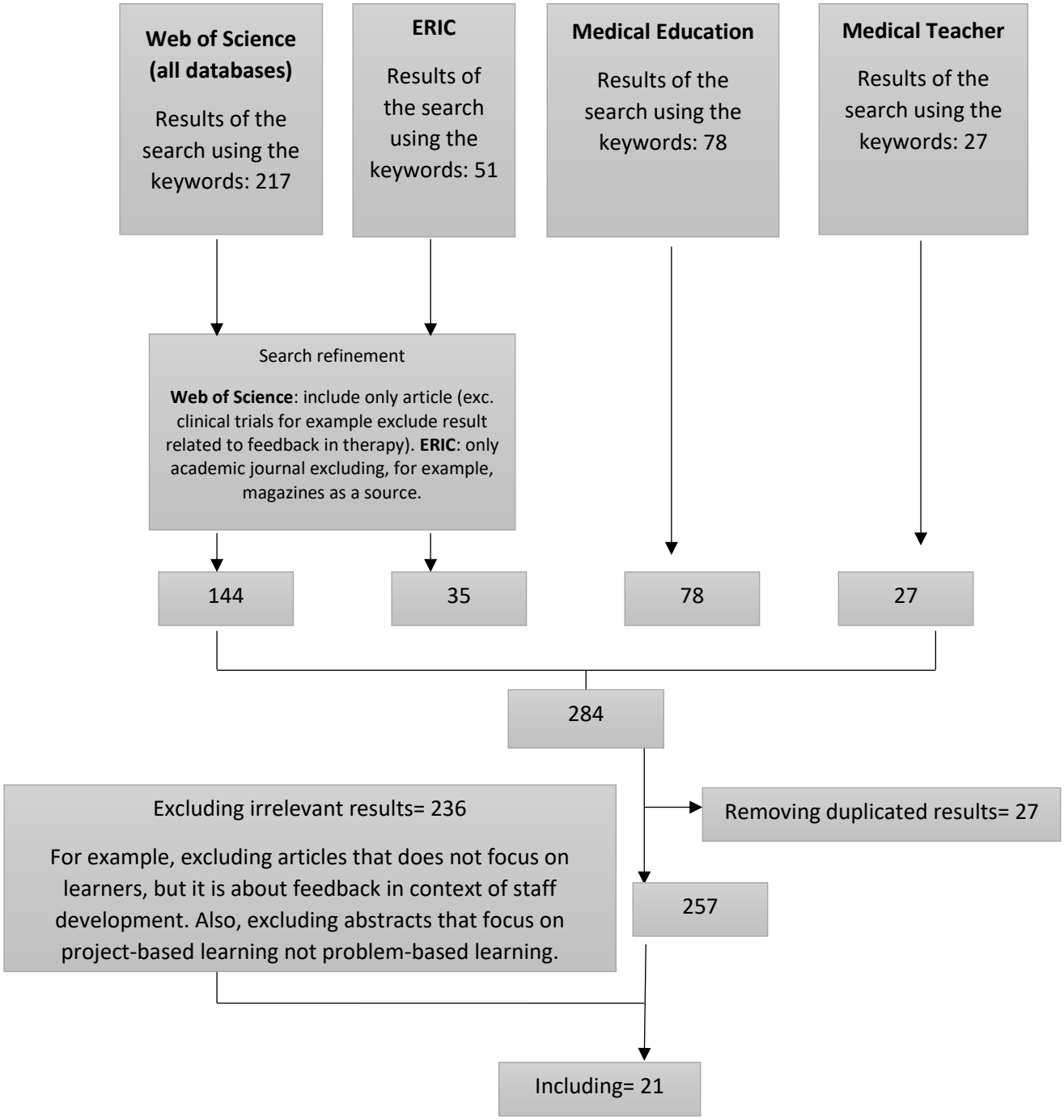
Appendixes

Appendix 1. Flow chart of search results in scoping review.



Appendix 2. Feedback quality

Hattie and Timperley (2007) point to four levels of feedback which were recommended to be applied as a framework to have effective feedback the students could utilise. These four levels of feedback could be overlapped when they are practised:

Task level: this is related to the task that students are approaching. This is where feedback is given to show what has been done well, or not, in the execution of the task. At this level, the student is shown and guided on the appropriate practising of such a task and how that is approached.

Process level: In this level, the student is supported to reflect on a performance, and process the concepts learnt in different and future situations.

Self-regulation level: Feedback at this level aims to develop self-regulation skills in learners, such as explaining the criteria required and the cognitive strategies needed to meet these criteria. Also, it explains to students why they approached the performance well, as well as when they did not, i.e. attribution of failure and success, as called by Hattie and Timperley (2007). The purpose here is to provide effective feedback for self-regulation.

Self (personal level): At this level, feedback outlines personal attributes and is usually positive, such as "You demonstrated great ability in performing this task". This level aims to build a personal efficacy, so it focuses on the person him/herself.

Also, Nicol and Macfarlane-Dick's (2006) synthesis—based on literature—seven principles for good practice of developing self-regulated learning through feedback:

1. Explaining how good performance is.
2. Developing self-assessment through reflection
3. Making students understand their current learning better and how they are achieving their goals.
4. Facilitating students–teacher verbal discussion about the learning process.
5. Supporting and developing self-esteem.
6. Helping students to close the gap between current and required performance.
7. Giving feedback to teacher to further develop the teaching.

Appendix 3. Key aspects of the scoping review

#	Authors and years	Aims	Methods	Key results	Critical comments
1	Hmelo-Silver & Barrows, 2006	Examined PBL tutorials to understand the facilitation skills in the USA	Observing and videotaping PBL tutorials	The authors found that the facilitator asked the students to summarise and explain the concepts which led to identification of the students' potential knowledge gaps and the support of the tutor's feedback	They ONLY used an experienced PBL facilitator (Barrows). It would worth to include a novel facilitator to explore the challenges that may face unfamiliar tutors, and then discuss the differences between the two experiences. They did not involve students' opinions about what they appreciated in the facilitating PBL sessions.
2	Hansford & Diehl, 1988	Examined the effect of feedback nature (+/-) on verbal behaviour in small group settings in Australia	Observation	They found that negative feedback made the feedback recipient more motivated to generate more ideas, while positive feedback had the opposite result	Although this study explored the effect of feedback by using the observation, they could explore the reasons behind students' responses and behaviours by using semi-structured interviews.
3	Medina et al., 2013	Examined which mode of feedback has an effect on problem solving skills	Controlled study: Group 1 had no feedback, Group 2 only had written feedback and Group 3 had written and verbal feedback	they found that both written and verbal feedback allowed the students to improve their problem-solving skills.	There are three scorers in this study, the 1st one gave lower grades compared to the two other scorers, and that made low reliability. In addition, it became worse when scorers did not assess the same students in the pre- and post-tests. It would be improved if students were scored by same scorers in both tests. The graders were different regarding being content experts. The 1st grader was a content expert, but the others were not, thus, low inter-rater reliability occurred because the 1st one focused on content, while the others focused on problem solving skills.
4	Krause & Stark, 2010	Examined the effect of feedback and reflection on learning in PBL	Controlled study	The researchers found that the students' learning was clearly developed by the feedback.	Although the authors mentioned that students were given task and process related feedback, this study did not examine to what extent the process is more beneficial than the task related feedback. In addition, further study should also examine the effect of the 3rd level "self-directed related feedback".

5	Mubuuke et al., 2016	Explored students' preferences regarding feedback in PBL	Individual interviews and focus group discussions	They found that students prefer and appreciate 'comprehensive' feedback which is not only on their construction of knowledge, but also on their professional skills (e.g. communication skills).	Although this study adopted exploratory qualitative methods which are useful to achieve the aim, it would be better to increase the sample by adding surveys for more generalisable results. Although this study involved students who are the central stakeholders in the feedback process, it would be interesting in future research to include tutors to have more breadth of experiences.
6	Chou et al., 2013	Examined the effect of long term learners' relationships on how peers give feedback in the small groups in a clinical setting	Controlled study	they found that peers who had a long-term relationship tended to give more specific feedback about communication skills.	Although they examined that effect, they did not examine the emotional reaction. This is important in receiving feedback as was discussed in the introductory literature review. Moreover, this study did not reveal the behavioural change resulting from the received feedback. The authors considered the long-term LEARNING relationships, but they did not consider the PERSONAL relationships, and that will help to explore additional effects on peer feedback in small group settings.
7	Holen et al., 2015	Examined students' preferences towards PBL curriculum	Surveys	they found that sociocultural and personal issues affect PBL preferences. For example, students from Nepal (i.e. Asia) have less of a preference for PBL because of its focus on student-centred learning, which is not popular in Nepal. In addition, they found that female students and those with a social personality had positive attitudes to the PBL approach.	This study did not show how such preferences toward PBL might be changed at a late stage in the PBL curriculum. In addition, this study is based on preferences, so including further semi-structured interviews will help researchers to explore the reasons behind the preferences.
8	Mobuuke et al., 2016	Explored factors affecting feedback utilisation the facilitators in PBL	Interviews and focus groups	the researchers found that social and cognitive factors affect feedback utilisation. For example, a tutor's interpersonal and communication skills were considered social effects and feedback which is	This study used only interviews, by adding surveys, the sample would be increased. Furthermore, they did not include the facilitators who could give more valued insights.

				overloaded, unfocused, and unspecific was perceived as a cognitive factor affecting feedback utilisation.	
9	Thome et al., 2016	Sought students' evaluation of portfolio assessment in PBL	Questionnaires	The students preferred it to traditional assessment. Tutors found discussion skills with students and giving feedback worth development.	Although the authors mentioned that the questionnaire was validated, they did not discuss the rational of the tool used (i.e. the questionnaire). In addition, the authors clearly presented the Likert scale result; however, they did not mention how the data were analysed.
10	Parikh et al., 2001	Identify what mode and source of feedback students prefer in the PBL tutorials, involving 103 graduate students from five medical schools in Ontario, Canada	Questionnaires	the author found that face-to-face individual feedback was the first preference of all five medical schools followed by face-to-face group feedback and peer feedback.	Although the authors revealed students' preferences by using questionnaires, they did not explore the reasons behind those preferences. Such reasons, like personality, are important to understand the environment of learning. In addition, the authors did not mention how large the entire population was, so 20 graduates from each medical school is not enough to be representative unless the entire population is known.
11	Papinzac, 2009	Explored first year medical students' perceptions regarding peer assessment in PBL	Focus groups	This study confirmed the positive effect of peer assessment on SDL. In addition, a small number of students explained that peer assessment is beneficial for their future as medical professionals. However, many students perceived that the assessment criteria were irrelevant to the learning processes in PBL groups. In addition, the students expressed that peer assessment is new and unfamiliar.	The author did not give a rational behind choosing this academic year (i.e. 1st). Involving more advanced students, such as second or third years, would give more valued results regarding how student develop peer assessment skills in later stages.
12	Tayem et al., 2015	Sought students' perceptions regarding peer assessment in PBL. It involved 4th year medical students in Bahrain.	Questionnaire	They found that most students (more than 70%) reported a positive attitude to peer assessment in PBL as they felt it developed their learning and self-assessment skills.	They justified their selection of the fourth academic year; however, they only involved 60 of the total population of 140, a larger sample would be more representative. In addition, the sample had only little experience of peer assessment (four PBL tutorials) before the study was conducted. It would be better to conduct a longitudinal study to investigate a

					change over time or conduct the study on sample who had more experience of peer assessment.
13	Kamp et al., 2014	Investigated the effect of peer assessment on individual contribution and academic achievement.	Randomised controlled study	They found that peer assessment did not develop individual contribution; however, it improved their academic achievement.	In this study, the students had only few tutorials after receiving peer assessment and before the final assessment. Consequently, they only had few opportunities to show and demonstrate the feedback effects on the individual contribution within PBL tutorials. Future research should consider this point to allow students enough time to demonstrate the feedback effect.
14	Web & Muallem, 2016	Assessed the effectiveness of feedback provided in online PBL tutorials	Mixed methods	They found that a balance between three types of feedback was effective and appreciated by students in terms of their development.	They involved only 11 graduate students and did not mention the entire population to ensure sample representativeness.
15	Coll et al., 2013	Explored the characteristics of feedback provided by the teacher and students in online small group learning	Case study, the authors analysed the feedback provided	They found that tutors and some students gave a fair balance of task- and process-related feedback.	They involved only nine students and two teachers, and did not mention the entire population to ensure sample representativeness.
16	Mubuuke et al., 2017	Explored how students use tutor feedback to promote self-regulated learning in PBL	Focus groups and interview with students	The tutor feedback helped students to promote self-regulated learning through activation of prior knowledge, reflection, and formulation of personal learning plan.	1. Limited on one sample in Uganda, Africa. 2. Limited to students' perceptions. 3. Limited to qualitative inquiry. 4. Limited to the tutor feedback (did not included peer feedback) 5. Regarding the reflections, authors did not explain how feedback quality influenced the reflection process. 6. Regarding formulating learning plan, to what extend it is students centred? To what extend tutor had a role in explain how the target could be achieved? The author did not discuss that.
17	Eladl et al., 2018	Implemented two ways feedback (tutor-student), then measure students' and tutors' reaction	Mixed methods (questionnaire, interviews, and focus groups)	There was a high students' satisfaction toward implementing the two ways feedback. It was helpful to identify strength and weakness and to promote reflection.	1. Only 90 students participated in the quantitative stage and 8 in the qualitative stage. 2. Limited to Anatomy subject in one institution. 3. The questionnaire included one item asking both negative and positive

					feedback, instead of being separate. 4. The questionnaire did not include other feedback purposes like why such performance was good or bad. 5. This study was limited to the two ways of feedback. It did not include peer feedback. Also did not discuss different modes of feedback like verbal vs written. 6. This study did not investigate why such experience is positive i.e. did not explore factors behind experience. 7. SPSS was used, but which analysis tests were used? And why? The authors did not answer these questions. 8. Regarding the qualitative stage sampling, there is no mention on how the sample was chosen. 9. Regarding the feedback sessions (tutor-students), it was approached by a small group. The authors did not mention why it was approached in a group instead of private. Also, how group feedback is different from one-to-one discussion? The authors did not discuss that.
18	Perera et al., 2008	explored students' and tutors' perceptions of formative. The specific aim was to explore the extent of matching of the two populations' perceptions (i.e. students and tutors).	Mixed methods (questionnaire and focus groups)	There were some mismatches between the two populations' perceptions. They found that 75% of tutors reported giving regular feedback to students, while 55% of students reported that (i.e. receiving regular feedback). Also, 86% of students requested a discussion with tutors but only 25% were offered that discussion. Students preferred feedback to be from a content expert; however, tutors believed giving feedback by non-expert using a model answer is acceptable.	1. This study is limited to one institution in Malaysia. 2. In this study, there is a deficiency in describing the methods process including the ethics and analysis. There is no mention of the size of participants in the qualitative stage. 3. Although this study approached mixed methods, it lacks deep explanation of potential factors influencing the quality of feedback. 4. In addition, this study's conclusion lack a framework that can be used in different settings considering such potential factors influencing the feedback process in PBL. 5.

19	Alhaqwi, 2012	This study explored Saudi male medical students about the barriers of receiving effective feedback	Quantitative (cross-sectional questionnaire)	• About half of students (52.7%) believed on presence of barriers in practicing effective feedback. • 47% of students believed that the barriers are related to the faculty (need feedback skills) • About 25% of students believe that feedback is interpreted as insults.	1. Limited on an quantitative approach, so it lacks more deep explanations of students experience. 2. Limited on only one source of feedback (i.e. tutor feedback) 3. Limited on male students. 4. Limited on one population perspectives (i.e. students) 5. I did not provide framework that could be approached by other settings.
20	Alhaqwi et al. 2012	Explored students perceptions of feedback in undergraduate medical education	Cross-sectional questionnaire	Majority of students (85%) believed that feedback is important; however, only 20% reported receiving regular feedback.	1. Limited on an quantitative approach, so it lacks more deep explanations of students experience. 2. Limited on only one source of feedback (i.e. tutor feedback) 3. Limited on one population perspectives (i.e. students) 4. Limited on male students although the authors discussed (in the literature review section) that gender had influence (female seek more feedback). 5. Since this study was based on a curriculum applies PBL, it lacks the link between student experience of the feedback process and their learning in the PBL tutorials (i.e. how the feedback influence students learning in a PBL curriculum). 6. The authors suggested a suitable approach to practice feedback, however that suggestion was based on a numeric data and lacks a deep understanding of such influencing factors.
21	Dannefer and Prayson 2013	Examined to what extent first-year medical students self-regulate their professionalism by using formative peer- and tutor-written feedback	Through analysing both formative written assessment feedback that students received during the year (identified shortcomings) and summative assessment (as portfolio that	The formative feedback (both tutor and peer) helped students to self-regulate their professional behaviours.	1. Limited on one class, one university. 2. This study needs further investigation how such external feedback helped student to self-regulate their professionalism. What factors are influencing their experience in receiving and utilising the feedback is important to be further investigated. 3. The feedback form that tutor and peer used, was limited to what went well (strength) and weakness. It lacks

			students submit attaching self-selected evidence on how they progressed) the end of the year		investigation of other purposes of feedback, such as how to do better. 4. This study was limited on one mode of feedback (the written mode). It lacks further investigation on how different modes have different effect. 5.

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Appendix 4. First created questionnaire (first draft)

Feedback process in small groups/PBL						
In Problem Based Learning (PBL), students learn through solving an open ended problem. It occurs in small groups and the focus is on students working independently and collaboratively with their peers to develop their own learning, with the support of the PBL tutor. Other small group settings may not be problem focused but students learn in small groups through the use of cases or other interactive discussions. The following set of questions aims to explore your experience of feedback during problem based learning or other small group settings. Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes.						
1	**University/school**					
2	**Gender**	Male ○		Female ○		
3	**Level**	First year ○	Second year ○	Third year ○	Fourth year ○	
4	**Do you learn through PBL?**	Yes ○		No ○		
5	If **NO** to question **4**, do you learn through small groups?	Yes ○		No ○		
	If **YES** please specify. If **NO**, do not continue completing the questionnaire.	……				
6	**Number of activities (tutorials) per week**	1-2 ○	3-4 ○	More than 4 ○ Please specify ……		
7	**Number of students in the group**	3-5 ○	6-8 ○	9-11 ○	Greater than 11 ○ Please specify ……	
Please mark the appropriate choice to each of the following statements and questions. Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes.						
8	**I receive feedback during small group/PBL**	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
9	**How do you receive feedback?**	Face-to-face ○	Written ○	Both ○	Other ……	
Please rate your preference regarding each type of feedback in the following statements.						
10	**I prefer "face-to-face" feedback**	Not at all ○	○	○	○	Very much ○
11	**I prefer "written" feedback**	Not at all ○	○	○	○	Very much ○
12	**Who gives you feedback?**	Tutor ○	Peer ○	Both ○		
13	**Which source of feedback you prefer?**	Tutor ○	Peer ○	Both ○		
The next section (q14-20) explores your views on the feedback you receive. Please think about your feedback experience in PBL or other small group settings from your **tutor** when answering these questions.						
14	I receive feedback that tells me **what** I am doing well	Never ○	Rare ○	Sometimes ○	Often ○	Always ○

15	I receive feedback that tells me **what** I can do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
16	I receive feedback that tells me **how** to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
17	I receive feedback that tells me **why** I need to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
18	I receive feedback that tells me **why** what I did was good or bad	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
19	I receive feedback that involves a **positive personal** aspect (e.g. you have a good problem solving skills)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
20	I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
The next section (q21-27) explores your views on the feedback you receive. Please think about your feedback experience in PBL or other small group settings from your **peer** when answering these questions.						
21	I receive feedback that tells me **what** I am doing well	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
22	I receive feedback that tells me **what** I can do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
23	I receive feedback that tells me **how** to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
24	I receive feedback that tells me **why** I need to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
25	I receive feedback that tells me **why** what I did was good or bad	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
26	I receive feedback that involves a **positive personal** aspect (e.g. you have a good problem solving skills)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
27	I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
28	Please think about your experiences of receiving feedback through different approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback **helps** you to improve your performance?					
29	Please think about your experiences of receiving feedback through different approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback are **unhelpful** in improving your performance?					

Appendix 5. Second version of questionnaire

Feedback process PBL					
In Problem Based Learning (PBL), students learn through solving an open ended problem. It occurs in small groups and the focus is on students working independently and collaboratively with their peers to develop their own learning, with the support of the PBL tutor. The following set of questions aims to explore your experience of feedback during problem based learning. Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes.					
1	**University/school**				
2	**Gender**	Male ○		Female ○	
3	**Level**	First year ○	Second year ○	Third year ○	Fourth year ○
4	**Do you learn through PBL?**	Yes ○		No ○	
5	If **YES** to question **4**, please specify how your curriculum implements PBL. If **NO**, do not continue completing the questionnaire.	……			
6	**Number of activities (tutorials) per week**	Less than 1 ○	1-2 ○	3-4 ○	More than 4 ○ Please specify ……
7	**Number of students in the group**	3-5 ○	6-8 ○	9-11 ○	Greater than 11 ○ Please specify ……
Please mark the appropriate choice to each of the following statements and questions. Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes.					
8	**I receive feedback during PBL**	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
9	**How do you receive feedback?**	Face-to-face ○	Written ○	Both ○	Other ……
Please rate your preference regarding each type of feedback in the following statements.					
10	**I like "face-to-face" feedback**	Not at all ○	○	○	○	Very much ○
11	**I like "written" feedback**	Not at all ○	○	○	○	Very much ○
12	**Who gives you feedback?**	Tutor ○	Peer ○	Both ○	
13	**Which source of feedback you prefer?**	Tutor ○	Peer ○	Both ○	

If you answered '**Tutor'** to question 12, please answer next section about **tutor** (q14-20) and q28 – 29. If you answered '**Peer'** to question 12, please answer the section for **peer** (q21-27) and q28 – 29. If you answered '**Both'** to question 12, please answer **all** the coming questions.						
Experience of **tutor** feedback	The next section (q14-20) explores your views on the feedback you receive. Please think about your feedback experience in PBL from your **tutor** when answering these questions.					
14	I receive feedback that tells me **what** I am doing well	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
15	I receive feedback that tells me **what** I can do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
16	I receive feedback that tells me **how** to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
17	I receive feedback that tells me **why** I need to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
18	I receive feedback that tells me **why** what I did was good or bad	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
19	I receive feedback that involves a **positive personal** aspect (e.g. you have a good problem solving skills)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
20	I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
Experience of **peer** feedback	The next section (q21-27) explores your views on the feedback you receive. Please think about your feedback experience in PBL from your **peer** when answering these questions.					
21	I receive feedback that tells me **what** I am doing well	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
22	I receive feedback that tells me **what** I can do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
23	I receive feedback that tells me **how** to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
24	I receive feedback that tells me **why** I need to do better	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
25	I receive feedback that tells me **why** what I did was good or bad	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
26	I receive feedback that involves a **positive personal** aspect (e.g. you have a good problem solving skills)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
27	I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	Never ○	Rare ○	Sometimes ○	Often ○	Always ○
28	Please think about your experiences of receiving feedback through different					

	approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback **helps** you to improve your performance?	
29	Please think about your experiences of receiving feedback through different approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback are **unhelpful** in improving your performance?	

Appendix 6. Final version of the questionnaire

Feedback process in PBL					
في التعليم المعتمد على حل المعضلات (PBL) يتعلم الطلاب من خلال نقاش جماعي يهدف الى حل معضلة محضرة مسبقا و هذا التعليم عادة يطبق على شكل مجموعة صغيرة من الطلاب مدعومة من قبل أستاذ. In Problem Based Learning (PBL), students learn through solving an open ended problem. It occurs in small groups and the focus is on students working independently and collaboratively with their peers to develop their own learning, with the support of the PBL tutor. الاسئلة التالية تهدف لاستكشاف خبرتك في تجربة تلقي التقييم و الملاحظات (feedback) اثناء حصص التعليم المعتمد على حل المعضلات. التقييم و الملاحظات (feedback) تهدف لإخبارك عن أدائك كطالب و قد تكون شفهيا وجها لوجه او مكتوبة في ورقة. The following set of questions aims to explore your experience of feedback during problem based learning. Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes.					
ملاحظة هامة: اذا كنت قد اكملت الاستبيان الإلكتروني سابقا لا يتوجب عليك اكمال هذا الاستبيان الورقي. **Important note**: if you have already completed the online questionnaire, please don't complete this questionnaire again.					
1	**الجامعة** **University/school**				
2	**الجنس** **Gender**	ذكر Male ○		أنثى Female ○	
3	**السنة الدراسية** **Level**	السنة الاولى First year ○	السنة الثانية Second year ○	السنة الثالثة Third year ○	السنة الرابعة Fourth year ○
4	**هل تتعلم عن طريق التعليم المعتمد على حل المعضلات؟** **Do you learn through PBL?**	نعم Yes ○		لا No ○	
5	إذا كانت إجابتك لسؤال 4 بـ(نعم) ارجو أن تحدد كيفية تطبيقه من قبل منهجك الدراسي If **YES** to question **4**, please specify how your curriculum implements PBL. **إذا كانت إجابتك بـ(لا) لا تكمل بقية الاستبيان** If **NO**, do not continue completing the questionnaire.	……			
6	**عدد الحصص الإسبوعية للتعليم المعتمد على حل المعضلات** **Number of activities (tutorials) per week**	أقل من مرة واحدة Less than 1 ○	1-2 ○	3-4 ○	أكثر من 4 مرات More than 4 ○ أرجو تحديد عدد المرات Please specify ……
7	**عدد الطلاب في المجموعة** **Number of students in the group**	3-5 ○	6-8 ○	9-11 ○	أكبر من 11 Greater than 11 ○ أرجو تحديد عدد الطلاب

						Please specify .....
8	**كم تستغرق من الوقت الجلسة الواحدة من التعليم المعتمد على حل المعضلات؟** **On average how long do you spend on each PBL tutorial?**	أقل من ساعة واحدة (ارجوا التحديد) ..... Less than one hour (please specify) ..... ○	ساعة واحدة One hour ○	ساعتان Two hours ○	ثلاث ساعات Three hours ○	اكثر من ثلاث ساعات (ارجوا التحديد) ..... More than 3 hours (please specify) ..... ○

التقييم و الملاحظات (feedback) تهدف لإخبارك عن أدائك كطالب و قد تكون شفهيا وجها لوجه او مكتوبة في ورقة .**من فضلك اختر الاجابة المناسبة لكل من الاسئلة والحالات الاتية**

Feedback tells you about your performance as a learner. Feedback can be verbal face-to-face comments or written notes. **Please mark the appropriate choice to each of the following statements and questions.**

9	**اتلقى التقييم و الملاحظات (feedback) خلال جلسة أو حصة التعليم المعتمد على حل المعضلات** **I receive feedback during PBL**	أبدا Never ○	نادرا Rare ○	بعض الأحيان Sometimes ○	غالبا Often ○	دائما Always ○
10	**كيف تتلقى التقييم و الملاحظات (feedback)؟** **How do you receive feedback?**	شفهيا Face-to-face ○	كتابة Written ○	كلاهما Both ○	اخرى Other	

من فضلك حدد مدى تفضيلك لكل من طرق تلقي التقييم و الملاحظات (feedback) التالية

Please rate your preference regarding each type of feedback in the following statements.

11	**افضل أن يكون التقييم و الملاحظات شفهيا (feedback)** **I like "face-to-face" feedback**	نهائيا Not at all ○	○	○	○	جدا Very much ○
12	**افضل أن يكون التقييم و الملاحظات مكتوبا (feedback)** **I like "written" feedback**	نهائيا Not at all ○	○	○	○	جدا Very much ○
13	**من الذي يعطيك و يقدم لك التقييم و الملاحظات (feedback) ؟** **Who gives you feedback?**	الأستاذ Tutor ○		الزميل Peer ○		كلاهما Both ○
14	**أي من مصادر التقييم و الملاحظات (feedback) تفضل؟** **Which source of feedback you prefer?**	الأستاذ Tutor ○		الزميل Peer ○		كلاهما Both ○

ملاحظة هامة

اذا كان جوابك لسؤال 13 **"الأستاذ"** من فضلك أجب على القسم التالي المتعلق **بالأستاذ** (من سؤال 15 إلى 21) و تخطى القسم المتعلق **بالزميل** (من سؤال 22 إلى 28).

If you answered '**Tutor'** to question 13, please answer next section about **tutor** (q15-21) and skip the section about peer (q22-28).

اذا كان جوابك لسؤال 13 **"الزميل"** من فضلك أجب على القسم المتعلق **بالزميل** (من سؤال 22 إلى 28) و تخطى القسم التالي المتعلق **بالأستاذ** (من سؤال 15 إلى 21)

If you answered '**Peer'** to question 13, please answer the section for **peer** (q22-28) and skip the section about tutor (q15-21).
اذا كان جوابك لسؤال 13 **"كلاهما"** من فضلك أجب على جميع الأسئلة التالية: القسم التالي المتعلق **بالأستاذ** (من سؤال 15 إلى 21) و القسم المتعلق **بالزميل** (من سؤال 22 إلى 28).
If you answered '**Both'** to question 13, please answer **all** the subsequent questions: about **tutor** (15-21) and about **peer** (22-28).

تجربتك مع **الاستاذ** في تلقي التقييم و الملاحظات (feedback) Experience of **tutor** feedback	هذا القسم (من سؤال 15 الى 21) يستكشف أرائك في التقييم و الملاحظات (feedback) التي تتلقاها من **الأستاذ**. من فضلك امعن النظر في تجربتك مع **الأستاذ** في تلقي التقييم و الملاحظات عند اجابتك للأسئلة التالية The current section (q15-21) explores your views on the feedback you receive. Please think about your feedback experience in PBL from your **tutor** when answering these questions.

15	**اتلقى تقييم وملاحظات تخبرني عن ادائي الجيد** (feedback) I receive feedback that tells me **what** I am doing well	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
16	**اتلقى تقييم وملاحظات تخبرني مايجب تحسينه في ادائي** (feedback) I receive feedback that tells me **what** I can do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
17	**اتلقى تقييم وملاحظات تخبرني عن كيفية تحسين ادائي** (feedback) I receive feedback that tells me **how** to do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
18	**اتلقى تقييم وملاحظات تخبرني لماذا يجب أن أحسن من ادائي** (feedback) I receive feedback that tells me **why** I need to do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
19	**اتلقى تقييم وملاحظات تخبرني لماذا كان ادائي جيد او سيء** (feedback) I receive feedback that tells me **why** what I did was good or bad	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
20	**اتلقى تقييم وملاحظات تحتوي وتمس جوانب شخصية اجابية (مثل أنت تمتلك مهارات جيدة في حل المعضلات)** (feedback) I receive feedback that involves a **positive personal** aspect (e.g. you have good problem solving skills)	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
21	**اتلقى تقييم وملاحظات تحتوي وتمس جوانب شخصية سلبية (مثل أنت لا تصغي الى نقاشات المجموعة)** (feedback) I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○

تجربتك مع **الزميل** في تلقي التقييم و الملاحظات Experience of **peer** feedback	هذا القسم (من سؤال 22 الى 28) يستكشف أرائك في التقييم و الملاحظات (feedback) التي تتلقاها من **الزميل**. من فضلك امعن النظر في تجربتك مع **الزميل** في تلقي التقييم و الملاحظات عند اجابتك للأسئلة التالية The current section (q22-28) explores your views on the feedback you receive. Please think about your feedback experience in PBL from your **peer** when answering these questions.					
22	**اتلقى تقييم وملاحظات تخبرني عن ادائي الجيد** (feedback) I receive feedback that tells me **what** I am doing well	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
23	**اتلقى تقييم وملاحظات تخبرني مايجب تحسينه في ادائي** (feedback) I receive feedback that tells me **what** I can do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
24	**اتلقى تقييم وملاحظات تخبرني عن كيفية تحسين ادائي** (feedback) I receive feedback that tells me **how** to do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
25	**اتلقى تقييم وملاحظات تخبرني لماذا يجب أن أحسن من ادائي** (feedback) I receive feedback that tells me **why** I need to do better	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
26	**اتلقى تقييم وملاحظات تخبرني لماذا كان ادائي جيد او سيء** (feedback) I receive feedback that tells me **why** what I did was good or bad	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
27	**اتلقى تقييم وملاحظات تحتوي وتمس جوانب شخصية اجابية (مثل أنت تمتلك مهارات جيدة في حل المعضلات)** (feedback) I receive feedback that involves a **positive personal** aspect (e.g. you have good problem solving skills)	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
28	**اتلقى تقييم وملاحظات تحتوي وتمس جوانب شخصية سلبية (مثل أنت لا تصغي الى نقاشات المجموعة)** (feedback) I receive feedback that involves a **negative personal** aspect (e.g. you don't pay attention to essential details in the case)	ابدا Never ○	نادرا Rare ○	بعض الاحيان Sometimes ○	غالبا Often ○	دائما Always ○
اسئلة عامة عن تجربتك في تلقي التقييم و الملاحظات اثناء حصص التعليم المعتمد عل حل المعضلات. **General questions** about your experience in feedback in PBL tutorials.						
29	**من فضلك امعن النظر في تجربتك مع تلقي التقييم و الملاحظات من خلال طرق مختلفة (شفهيا أو كتابيا) ومن مصادر مختلفة (الأستاذ أو الزميل). برأيك ما هي مظاهر وصفات التقييم و**					

	الملاحظات التي تساعد في تحسين أدائك؟ Please think about your experiences of receiving feedback through different approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback **helps** you to improve your performance?	
30	**من فضلك امعن النظر في تجربتك مع تلقي التقييم و الملاحظات من خلال طرق مختلفة (شفهيا أو كتابيا) ومن مصادر مختلفة (الأستاذ أو الزميل). برأيك ما هي مظاهر وصفات التقييم و الملاحظات التي لا تساعد في تحسين أدائك؟** Please think about your experiences of receiving feedback through different approaches (e.g. face-to-face, written) and different sources (e.g. peer, tutor**). In your words**, what features of feedback are **unhelpful** in improving your performance?	

Appendix 7. Focus groups questions

- **Students' perceptions of feedback:**
    1. What does feedback mean for you?
    2. How does feedback help you?

- **Feedback style and source:**
    1. How do you get feedback?
    2. How does this impact on your performance? Why
    3. Which method do you prefer? Why?
    4. If not mentioned, who gives you the feedback?
    5. Which method do you find most useful? Why

- **Students' perceptions of levels of feedback- each level separately:**
    1. Feedback that tells what went well in the performance.
    2. What needs to be done better.
    3. How to do better.
    4. Why it was good or bad.
    5. Why there is need to do better.
    6. Feedback that involves positive personal aspects.
    7. Feedback that involves negative personal aspects.

- **Finally:**
    1. Is there anything else then you would like to say about PBL and feedback?

Appendix 8. Semi-structured interviews questions

- **Tutor's perceptions of feedback:**
  1. What does feedback mean for you?
  2. How does feedback help students?

- **Feedback style:**
  1. How do you prefer to give feedback (verbal or written)? Why

- **Feedback source:**
  1. I have asked about thinking about tutor vs peer feedback- What are the advantages and disadvantages?

- **Tutor communication with levels of feedback- each level separately:**
  1. There are different levels to feedback, how do you communicate these different levels to students?
     (a) Feedback that tells what went well in the performance.
     (b) What need to be done better.
     (c) How to do better.
     (d) Why it was good or bad in performance.
     (e) Why there is a need to do better.
     (f) Feedback that involves positive personal aspects.
     (g) Feedback that involves negative personal aspects.

- **Finally:**

Is there anything else then you would like to say about PBL and feedback?

Appendix 9. Ethics application and approval letter

Downloaded: 01/06/2021
Approved: 14/12/2017

Abdulmohsen Alomair
Registration number: 160202292
Medical School
Programme: PhD in medical education

Dear Abdulmohsen

PROJECT TITLE: Staff and students' perceptions of feedback in problem-based learning (PBL) in Saudi Arabian medical schools: a mixed methods study
APPLICATION: Reference Number 016616

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 14/12/2017 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 016616 (form submission date: 08/12/2017); (expected project end date: 30/09/2019).
- Participant information sheet 1036261 version 4 (28/11/2017).
- Participant information sheet 1036262 version 4 (28/11/2017).
- Participant consent form 1036263 version 3 (28/11/2017).

If during the course of the project you need to deviate significantly from the above-approved documentation please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Laura Williams
Ethics Administrator
Medical School

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Application 016616

Section A: Applicant details

Date application started:
Mon 16 October 2017 at 02:05

First name:
Abdulmohsen

Last name:
Alomair

Email:
amialomair1@sheffield.ac.uk

Programme name:
PhD in medical education

Module name:
Medical education
Last updated:
14/12/2017

Department:
Medical School

Applying as:
Postgraduate research

Research project title:
Staff and students' perceptions of feedback in problem-based learning (PBL) in Saudi Arabian medical schools: a mixed methods study

Has your research project undergone academic review, in accordance with the appropriate process?
No

Similar applications:
- not entered -

Section B: Basic information

Supervisor

Name	Email
Michelle Marshall	m.marshall@sheffield.ac.uk

Proposed project duration

Start date (of data collection):
Thu 1 February 2018

Anticipated end date (of project)
Mon 30 September 2019

3: Project code (where applicable)

Project externally funded?

- not entered -

Project code
- not entered -

Suitability

Takes place outside UK?
Yes

Involves NHS?
No

Health and/or social care human-interventional study?
No

ESRC funded?
No

Likely to lead to publication in a peer-reviewed journal?
Yes

Led by another UK institution?
No

Involves human tissue?
No

Clinical trial or a medical device study?
No

Involves social care services provided by a local authority?
No

Involves adults who lack the capacity to consent?
No

Involves research on groups that are on the Home Office list of 'Proscribed terrorist groups or organisations?
- not entered -

Indicators of risk

Involves potentially vulnerable participants?
No
Involves potentially highly sensitive topics?
No

Section C: Summary of research

1. Aims & Objectives

Aims
Explore students' and tutors' experiences of the feedback process within PBL settings in medical schools in Saudi Arabia. The objectives are to examine:
• Students' preferences of modes and sources of feedback within the PBL approach.
• The reasons for such preferences.
• What levels of feedback students and tutors usually give within different settings and explore the reasons for these processes.

2. Methodology

Methods
Since the research aims to answer questions "what" and "why", mixed methods research (quantitative and qualitative) is considered as a most suitable method that should be adopted. According to Teddlie and Tashakkori (2009), there are different mixed-method research approaches. One of these is sequential mixed design, which involves starting with either qualitative or quantitative methods, followed by the other. In this study, the researcher will begin with a

questionnaire and explore key findings from the questionnaire data further through qualitative interviews and focus groups. The research aims to seek students' opinions and preferences first before exploring the reasons for their preferences.

Settings
This PhD research will focus on feedback process in PBL tutorials in Saudi Arabian medical schools, thus medical schools that use PBL (pure or hybrid) in Saudi Arabia will be included. The proposed research is based on medical schools because PBL is only applied in medical schools in Saudi Arabia and, additionally, this aligns with the researcher's focus. It is estimated that there are about fifteen medical schools applying the PBL approach in Saudi Arabia, and these have 40 to 140 medical students in each academic year. In the quantitative stage, all medical schools that adopt PBL will be sent the questionnaires by email. To facilitate this action, the Dean in each of these schools will be identified and then will be written to, asking for permission to circulate the questionnaire to their students. In the qualitative stage, interviews and focus groups will be conducted face-to-face in the three most feasible medical schools. Key contacts in each of these schools will be contacted to request permission to conduct the interviews and the focus groups.

Sample
All medical students (first to fourth academic years) who participate in PBL tutorials will be involved in the quantitative stage. However, in the qualitative stage, only three schools will be included. Similarly, only the tutors from the three schools will be involved in the qualitative stage. Since this study adopts grounded theory approach, saturation will be considered in sampling, which is the point where no new data emerges. Therefore, qualitative data (interviews with tutors and focus groups with students) will be collected until saturation, and it is anticipated that four focus groups (two for male students and two for female students) are needed to be conducted in each of the potential three medical schools, prior to achieving saturation. The focus groups are conducted separately for males and females because in Saudi Arabian medical school males and females learn separately. An informal investigation and discussion with key contacts show no systematic differences between the Saudi Arabian medical schools in their curricula. While qualitative data is collected, if there are differences, an additional school will be recruited. Three schools will be chosen for further qualitative investigation based on previous collaboration and expression of interest.

Data analysis
The proposed research will adopt a sequential mixed-method approach, beginning with the quantitative method and continuing with qualitative methods. Therefore, the analysis will be sequenced. First, the quantitative data will be analysed by using the SPSS statistical package. The choice of statistical tests will be determined through discussion with the supervisory team and a statistician, but is likely to include the Kruskal-Wallis test, two-way ANOVA, and Mann-Whitney test. The
key findings of the quantitative data will be further investigated through qualitative approaches to better understand the key findings of the questionnaire data. A Thematic coding approach will be used in the analysis of the qualitative data, and will include the following key stages: familiarisation with the data; generating codes; developing themes; and drawing conclusions.

3. Personal Safety

Have you completed your departmental risk assessment procedures, if appropriate?

- not entered -

Raises personal safety issues?

No

- not entered -

Section D: About the participants

1. Potential Participants

This research will focus on feedback in problem-based learning (PBL) in undergraduate medical training. Therefore, medical students who learn through PBL and tutors who facilitate PBL will be identified as potential participants.

2. Recruiting Potential Participants

In the quantitative stage, all medical schools that adopt PBL will be sent questionnaires by email. To facilitate this action, the key contacts, the Dean or Course Lead, in each of these schools will be identified and then will be written to, asking for permission to circulate the questionnaire to their students. In the qualitative stage, interviews (with tutors) and focus groups (with students) will be conducted face-to-face in the three most feasible medical schools (see 'sample' section for details of how this decision is made). Key contacts in each of these schools will be contacted to request permission to conduct the interviews and the focus groups.

2.1. Advertising methods

Will the study be advertised using the volunteer lists for staff or students maintained by CiCS? No

- not entered -

3. Consent

Will informed consent be obtained from the participants? (i.e. the proposed process) Yes

For focus groups and interviews only, written consent will be obtained for participation. An information sheet and consent form will be sent to key contacts, the Dean or Course Lead, in each of the three schools for distribution to the students, who will be offered the opportunity to discuss the project prior to participation with either the key contact in the school or the researchers. With regard to the questionnaire, completion of the questionnaire implies consent.

4. Payment

Will financial/in kind payments be offered to participants? No

5. Potential Harm to Participants

What is the potential for physical and/or psychological harm/distress to the participants?

This project focuses on feedback in PBL tutorials. It is not anticipated that the project will raise any sensitive issues.

How will this be managed to ensure appropriate protection and well-being of the participants?

Although this project is considered low risk, should any concern arise, the participants can contact the researcher, the supervisor, personal tutor or course leader in the first instance.

Section E: About the data

1. Data Confidentiality Measures

Recorded interviews will not be shared and data will be anonymised, for example, a number instead of a name will be used in transcriptions. Identifiable details such as names of persons will be removed from the transcriptions. With regard to the questionnaire, it does not ask for identifiable details.

2. Data Storage

The researcher will have control of the data generated by the project. Data will be stored in a university secured hard drive. The researcher is planning to transcribe by himself. Transcription will not contain any personally identifiable information. The recordings will be destroyed at the end of the PhD project which is in three years, and anonymised transcriptions will be destroyed in five years.

Section F: Supporting documentation

Information & Consent

Participant information sheets relevant to project?
Yes

Document 1036261 (Version 4)	All versions
Document 1036262 (Version 4)	All versions

Consent forms relevant to project?
Yes

Document 1036263 (Version 3)	All versions

Additional Documentation

Document 1036266 (Version 2) All versions
Questionnaire

Document 1036265 (Version 3) All versions
proposal

Document 1037673 (Version 1) All versions
Consent form in PDF

External Documentation

- not entered -

Section G: Declaration

Signed by:
Abdulmohsen Alomair
Date signed:
Fri 8 December 2017 at 16:04

Offical notes

- not entered -