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Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach

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Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty

Development in Saudi Arabia: A Mixed Methods Approach

by

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Abstract

Feedback from students is one of the most frequently used tools for evaluating/improving university instructors' performance, assessing teaching quality, and improving learning outcomes. However, few studies have fully examined the effect of instructors receiving *timely* feedback from students, or student and instructor perceptions about feedback to instructors. This study's first goal was to determine whether timely student feedback to Problem-Based Learning (PBL) instructors affects teaching styles and teaching quality in a Saudi Arabian university. The second goal was to explore whether student feedback in general and timely student feedback in particular to PBL instructors would contribute to faculty professional development.

An embedded mixed methods design was used, whereby a qualitative method was embedded within a quantitative experimental major design. Quantitative data were first collected via a survey administered twice during a study block to 329 first-year, male and female medical students in novice and advanced streams. Students and instructors were divided into an experimental (E) and a control (C) group where students evaluated 22 PBL instructors on instructor performance and PBL session organization. However, only E group instructors received timely student feedback. Qualitative data were then collected from 61 of these students and 13 instructors through one-on-one semi-structured interviews.

The quantitative results showed significant differences in student scores between the E and C groups. Then, student results were analyzed separately for differences based on gender and novice and advanced streams. The results showed differences in student scores between the E and C groups for the male and novice stream students, and no significant difference in student scores for the female and advanced stream students. Qualitative data for the instructors and students revealed three major overarching themes concerning the importance, process, and use of

student feedback. The mixed methods' results showed the effectiveness of timely student feedback on instructors' performance and PBL session organization items. Additionally, the effectiveness of timely student feedback was shown for both men and women and for novice students, but not for advanced students.

Preface

This thesis is original, unpublished, independent work by the author, Abdulaziz Alhassan. The data collected from both questionnaires and interviews and their analysis reported in Chapters 3-5 were covered by Ethics Certificate number REB15-1782, issued by the University of Calgary, Canada, Conjoint Health Research Ethics Board (CHREB) on September 9, 2015 for the project titled "Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach."

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My deep gratitude is additionally extended to the College of Medicine at King Saud bin Abdulaziz University for Health Science in Riyadh, Saudi Arabia, for allowing me to conduct my research at their facility and to their students and instructors for participating in this research.

Dedication

This thesis is dedicated to:

My late *Grandmother* who throughout her lifetime advised me
and taught me to pursue my dreams, and whom I still miss every day.

My *Mother* for the unconditional
love and support she provided me throughout my life.
Thank you for giving me the strength and trust to reach my dreams.

My *Father* for his trust and encouragement through my journey.

To my *wife* Rema and my daughters *Noura & Leena*, who have grown
throughout this journey. I could not have done it without you.

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List of Abbreviation

Abbreviation	Definition
ANOVA	Analysis of Variance
C	Control Group
C_M	Male Control Group
C_F	Female Control Group
C_{S1}	Stream One Control Group
C_{S2}	Stream Two Control Group
COM	College of Medicine
E	Experimental Group
E_M	Male Experimental Group
E_F	Female Experimental Group
E_{S1}	Stream One Experimental Group
E_{S2}	Stream Two Experimental Group
KSAU-HS	King Saud bin Abdulaziz University for Health Sciences
NCAAA	National Commission for Academic Accreditation and Assessment
NVivo	Qualitative Data Analysis (QDA) Computer Software Package Produced by QSR International.
PBL	Problem-Based Learning
PCA	Principal Component Analysis
S_1	Stream One Students/ Novice Students
S_2	Stream Two Students/ Advanced Students
SPSS	Statistical Package for Social Sciences Software
T_1	Time One Evaluation
T_2	Time One Evaluation

Chapter One: Introduction

Overview

Student Feedback in Higher Education

Many purposes are identified in the literature regarding the usefulness of employing student evaluations of instructors, which are the most common form of evaluation used in faculty development to assess the quality of instructor teaching (Aburawi, McLean, & Shaban, 2014; Flodén, 2017). Concerning how student evaluations affect instructor performance, Rifkin (1995) noted that student evaluations are a mechanism for gathering information to assess and improve the teaching skills of instructors, to facilitate instructors' professional development and self-improvement, and to evaluate the pedagogical quality of courses. Other researchers have similarly argued that student feedback is one of the most important techniques instructors can use to identify strengths and weaknesses in their teaching performance, which, in turn, impacts student outcomes (Anderson et al., 1991; Irby, Gillmore, & Ramsey 1987; Safavi, Bakar, Tarmizi, & Alwi, 2013). Kelly (2012) further observed that the purpose of seeking students' evaluation of instructors is to assist instructors in monitoring their own performance as instructors. Thus, as studies have shown, student feedback can play an important role in improving the performance of instructors and the quality of teaching in higher education.

Student feedback has also been shown to be useful to university administrators for evaluating teaching performance and course content. Specifically, Beran, Violato, and Kline's (2007) study found that student feedback is useful to university administrators in evaluating teaching quality. Kelly (2012) also noted that student feedback assists administrators in observing and evaluating the quality of the curricula. Murray's (1997) overview of three sources of research evidence—specifically, faculty opinion surveys, field experiment studies, and

longitudinal comparison trends additionally concluded that student feedback has significantly contributed to general instructional improvement in universities. Higher education institutes, thus, benefit from student feedback, as it provides a tool to assist the administration in monitoring student needs and satisfaction about teaching performance and course quality, and to make improvements as needed.

Students also receive benefits from providing feedback to instructors. Dewald (2016) explained that one such benefit is to let students know that instructors are listening and taking their concerns seriously about the instructional process. Students who are asked to provide feedback to instructors may also more readily feel as though their instructors care about how students perceive course content and the quality of instruction. Other researchers have argued that student feedback is related to student learning and achievement, meaning that universities can use student feedback to improve the learning environment (Wachtel, 1998). Thus, student feedback to instructors provides benefits not only for instructors and universities, but also for students in higher education.

However, many researchers have observed how a lack of quality feedback from students, together with the timing of conducting student evaluations and delivering those evaluations to instructors, may affect student achievement. For instance, in their research on how individuals achieve expert performance, Ericsson, Krampe, and Tesch-Römer (1993) found that expert performance depends on an actor receiving immediate, relevant, adequate, and informative feedback about their performance. Nonetheless, if feedback is delivered effectively in an appropriate setting and a non-judgmental opinion is offered, instructors and learners can both more effectively explore areas for improvement in their own performances (Schartel, 2012). To optimize its benefit to students, Brinko (1993) and Gormally, Evans, and Brickman (2014)

argued that student feedback is more effective when it is delivered as quickly as possible after the teaching. However, although most studies noted the importance of timely feedback, few mentioned *when* feedback should be given, compared to *who* should give it, or *what* should be included in it (Brinko, 1993). Consequently, an *absence* of *proper and timely* feedback to anyone looking to improve their performance could affect their learning productivity and yield only limited improvements in performance.

In reviewing the studies about student feedback, some common gaps exist. Only a few studies have explored the *perceptions* students hold about the worth of delivering feedback to their instructors and if students take such evaluations seriously (Chen & Hoshower, 2003; Wachtel, 1998). Along with this, these studies also lack precise information about *how* instructors take in such student feedback once they receive it (Chan, Luk & Zeng, 2014). Moreover, most of the studies about the effectiveness of student feedback have only been quantitative in nature. Yet, qualitative methods would provide a deeper exploration of factors that affect student and instructor perceptions of student feedback. Consequently, to obtain a more holistic picture of student feedback and to measure its effectiveness, Schifferdecker and Reed, (2009) noted that researchers can achieve a better understanding of relationships and phenomena by collecting and analyzing both qualitative and quantitative data. This insight helps researchers draw stronger and more useful conclusions than if only quantitative or qualitative methods are used.

Student Feedback/Evaluation of Instructors in Saudi Arabia

Murray (1997) observed that between the 1960s to 1970s, the formal use of student evaluation, both in formative and summative[1] forms, increasingly spread from North America to many academic institutions across the globe. Specifically, in Saudi Arabia, the National Commission for Academic Accreditation and Assessment (NCAAA) is the organization that oversees the academic accreditation of universities. In 2013, the NCAAA acknowledged that quality of teaching was of prime importance within 11 key areas for accreditation approval in Saudi Arabia. The NCAAA noted that the standards it set in these 11 areas are grounded in what the global higher education community commonly considers to be best practice. Under its standards for *Learning and Teaching*, the NCAAA further pointed out that students must be a prime source of evaluating teaching quality and program usefulness, feedback must be used as the reasoning for improvement plans, and appropriate tools for this measurement should be included in student evaluations.

Despite these requirements, student evaluation of instructors is a relatively recent phenomenon in Saudi Arabian universities. In fact, there are few studies that examine the effectiveness of student feedback, and to the writer's knowledge, no studies have taken place in Saudi Arabia that specifically measure the relevance and effectiveness of *timely* feedback on course quality or instructor performance. For example, Al-Rubaish et al.'s (2010) study explored how a specific questionnaire for students could be revised to evaluate the teaching skills of instructors. However, there was no follow-up to assess whether the revised evaluation form resulted in instructor or course improvement, or what effect, if any, timely feedback to instructors had on instructor teaching performance and course quality. Additionally, a gap exists

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[1] An explanation of formative and summative forms of evaluation is provided in Chapter two of this thesis.

in identifying the precise elements that could impact the quality of student feedback effectiveness. Thus, the researcher concluded that a study in Saudi Arabia that examines the impact of timely feedback to instructors and explores the effectiveness in general of student feedback should be examined and measured. Moreover, a mixed methods methodology can provide the quantitative and qualitative data that will help the researcher more fully understand concerns related to the effectiveness of student feedback in Saudi Arabia.

Therefore, the intention of this study was to specifically address these gaps in a Saudi Arabian university context through the use of a mixed methods embedded experimental approach. The quantitative portion of the study examined the effectiveness of timely student feedback to Problem-Based Learning (PBL) instructors, while the qualitative part of the study explored, through semi-structured interviews, the perceptions of students and PBL instructors on student feedback in a Saudi Arabian university.

Mixed Methods Purpose Statement

This mixed methods study investigated whether timely and appropriate feedback to PBL instructors is an important factor that directly impacts teaching styles and the quality of teaching in Saudi Arabian universities. This study also explored whether timely student feedback provided to PBL instructors contributes to faculty professional development. An embedded design was used in which qualitative data are embedded within a quantitative experimental major design. The quantitative data were used to measure the effectiveness of timely feedback on PBL instructors who received timely mid-block feedback, versus those who received no mid-block feedback. Student feedback was measured to see whether there was any difference in PBL instructor performance and course quality for those PBL instructors who received timely mid-block feedback versus those who did not receive timely mid-block feedback at the College of

Medicine (COM) on the main campus at the King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS) in Saudi Arabia. The embedding of the qualitative data was expected to provide an enhanced understanding of the quantitative results by exploring the perceptions of both students and PBL instructors about the effectiveness of student feedback generally, and timely feedback, specifically.

Theoretical Framework

Pragmatism was the theoretical framework adopted for this study, and is usually associated with a mixed methods methodology; that is, the use of both quantitative and qualitative methods in one study (Creswell & Clark, 2011). Regarding its philosophical assumptions, quantitative research (also known as positivist research) posits that research should be objective and that only one reality and truth exist, which can be determined through the methods of collecting data and using numbers and statistics (Johnson & Onwuegbuzie, 2004). In contrast, qualitative research (known as constructivist research) theorists argue that "multiple-constructed realities abound, that time- and context-free generalizations are neither desirable nor possible, that research is value-bound, [and] that it is impossible to differentiate fully causes and effects" (Johnson & Onwuegbuzie, 2004, p. 14). Here, participants express their views of reality through the words they use to reflect their perceptions of the world around them, and the researcher uses participants' quotes to categorize data into themes and sub-themes to present these multiple realities.

However, in a pragmatic approach to research, there is no reliance on any particular philosophical assumption or specific way of thinking about reality and truth, or on the need to use a specific method to conduct the research. Specifically, data collection is carried out through various appropriate methods that will best address the research questions (Creswell & Clark,

2011). Using a framework of pragmatism also means that the research is more problem-centered—specifically, that the research questions drive the research, rather than the methods used (Newman & Benz, 1998; Tashakkori & Teddlie, 1998). This type of theoretical framework, thus, uses quantitative and qualitative methods at the same time to address the research questions (Creswell & Clark, 2011). Moreover, Johnson and Onwuegbuzie (2004) argued that a pragmatic approach is productive in mixed methods research because of the following:

> It offers an immediate and useful middle position philosophically and methodologically; it offers a practical and outcome-oriented method of inquiry that is based on action and leads, iteratively, to further action and the elimination of doubt; and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions. (p. 17)

Therefore, the researcher took a pragmatic stance to this study, which meant not relying on a particular philosophical assumption to shape the study, but instead centering on the research questions to guide the research and focusing on practical outcomes for the research.

Aims of the Research

Given the gap in research in Saudi Arabia, the goals of this study were as follows. The first is to determine whether timely and appropriate feedback to PBL instructors is an important factor that directly affects teaching styles and the quality of teaching in Saudi Arabian universities. For the purposes of this research, timely feedback was defined as student feedback that was provided to the instructor during a course or study block and where the same instructor was assigned to the same students for the duration of the course or study block. The second goal was to explore whether student feedback in general and timely student feedback in particular that was provided to the PBL instructor would contribute to faculty professional development.

Research Questions

The research questions for this study were as follows:

1) Do students perceive any difference in the quality of teaching between PBL instructors who have received timely feedback during the study block versus those PBL instructors who have received no feedback from student evaluations during the study block in a Saudi Arabian university?

2) What are PBL instructors' perceptions about receiving suitable and applicable feedback on course evaluations to foster quality teaching and learning?

3) What are student perceptions about providing suitable and applicable feedback on course evaluations to foster quality teaching and learning?

4) What are the PBL instructors' and students' perceptions about student feedback on instructional performance in regards to making a difference in instructor performance?

Significance of the Research

The literature provides clear evidence about the effectiveness of student feedback on instructors' performance and how it can help improve such performance and students' learning. Yet, there appears to be scant insight into the effect of student feedback in Saudi Arabia and more specifically on the influence of timing on the effectiveness of students' feedback to their instructors. Thus, this study is anticipated to achieve the following:

1- Aid in improving this situation by determining whether or not feedback, in general, and timely feedback, in particular, could improve student satisfaction about the quality of teaching and learning in Saudi Arabian universities.

2- Answer whether student feedback could contribute to faculty professional development overall and potentially prove to be significant in contributing to the

development and application of feedback results in the medical academic field. In turn, this understanding could help motivate instructors to improve and develop their awareness for and consideration of the factors affecting their performance and student satisfaction.

3- Provide insights for faculty development and teaching performance throughout post-secondary institutions in Saudi Arabia, not just in the university where this study took place. Since Saudi universities have similar structures and follow similar curricula and teaching styles, implementing the suggested modifications could be relatively simple and straight-forward, since the Ministry of Education governs all universities.

4- Lay the foundation for other comparative studies by creating a platform for future research on this topic and contribute to the understanding and appreciation of the concept of student feedback in Saudi Arabia and surrounding Middle Eastern countries.

The thesis is divided into five chapters. Chapter one provides an introduction to the study, presents background information about the topic of student feedback, states the aim of this study, and ends with the research questions that guide this research. Chapter two provides a review of the literature relevant to the current study. Chapter three outlines the research methodology utilized to answer the study's research questions. Chapter four presents the results of the study. Finally, chapter five presents a discussion of the research results for the purpose of evaluating the research questions and ends with recommendations from the study and for future research, as well as the strengths and implications of the research.

Chapter Two: Literature Review

Introduction

The purpose of this literature review is to provide a critical examination of the research on student feedback to instructors in higher education. Although student feedback and evaluation of instructors has become the norm in higher education, it remains an issue that raises questions and controversy. This includes the way in which feedback is provided, whether the student is the best source of feedback to the instructor, and the role of administrators and instructors in higher education regarding student feedback. Of primary concern is whether student feedback about the instructional methods of instructors is an effective source of information to help instructors improve how they teach (Spooren & Mortelmans, 2006). Thus, while student feedback has become an important part of the process of evaluating instructors, there is much debate about whether the best methods are being used to collect and utilize student feedback to evaluate the performance of instructors.

To review the relevant literature for this study, I used the following key words, either alone or in combination with the terms: *student feedback* or *feedback*: *evaluation, timely, timely manner, higher education, medical education, perceptions of instructors, perceptions of students, university administr*ators, *gender differences, novice and advanced students, faculty development, mixed methods methodology, Saudi Arabia, effectiveness of,* and *factors affecting.* The following electronic databases were then searched using the research key words stated above: PubMed, ERIC, Taylor & Francis, Sage Publications, Springer, Wiley Online Library, Psych Net, Elsevier, and Google Scholar. From the search terms, a number of academic peer-reviewed journal articles, books, and book chapters were identified. In addition, I accessed the

website of an organization for university accreditation in Saudi Arabia. Through this process, I critically evaluated studies in my area of research to identify gaps in the literature for this study.

This literature review begins with a review of the definitions in the literature about student feedback and presents a definition that will be used throughout this study. This section is followed by a discussion about the sources of feedback that are used in higher education and the purpose of student feedback. Next, a review of the literature regarding the use of student feedback in different teaching methods is presented. In addition, the literature regarding student and instructor perceptions about student feedback is examined. Then, factors improving the effectiveness of student feedback toward instructors is presented, including aspects such as the content of feedback, the manner in which feedback is provided, who gives the feedback to instructors, and clarity of the feedback process. Finally, the timeliness in which feedback is provided, the role of administrators in the student feedback process, and the idea of using mixed methods in the student feedback process are discussed. Additionally, a review of the student feedback studies conducted in Saudi Arabia is included. Taken together, the goal of this literature review is to identify gaps in the literature about student feedback, especially in Saudi Arabia, that need to be addressed through further academic study.

Definition of Student Feedback

Upon review of the student feedback literature, it appears that while student feedback is widely discussed and investigated, it is often not directly defined in most studies. Perhaps it is viewed as a self-evident concept that is widely understood. Of the studies that have offered a definition, researchers have minimally explained what student feedback means. For example, Goldschmid (1978) explained that student feedback was the process of asking students to provide ratings about their instructors, as well as ratings about the content of courses. Hattie and

Timperley (2007) noted that feedback is information that is collected from an individual regarding aspects of another person's understanding or performance. Moreover, Darling-Hammond, Wise, and Pease (1983) reported that evaluation is the process of collecting information and using that information to judge something. While each of these definitions of feedback and evaluation emphasize that information and data are collected about a person's performance, each is lacking in that they do not indicate *how* the information and data regarding the performance of others is collected and delivered. As student feedback involves a complex process, a more specific and concrete definition is needed to ensure a complete understanding of what is meant by the concept of student feedback.

In considering descriptions of the student feedback process and the definitions of feedback and evaluation contained within the academic literature, a revised definition of student feedback will be used in this study. Accordingly, student feedback is defined as the process of collecting student perceptions about course content, and instructor behaviours and performance, *as well as* delivering this collected information to instructors from students in a *timely* manner. A timely manner refers to the guideline that instructors receive feedback before the end of the course or study block, so they can make modifications to either their teaching performance or to the course content, while the same instructor is continuing to teach the same students. This definition is appropriate because it includes the idea of collecting information about the perceptions of students, about both the performance of instructors and course content, and it integrates timeliness into the delivery process of student feedback. Thus, collecting feedback from students and delivering it to instructors should be completed within an appropriate timeframe, in order to maximize its effectiveness.

Feedback in Higher Education

Although it has been acknowledged that feedback in higher education enhances the quality of learning, it has been difficult to demonstrate the impact of feedback on enhancing learning outcomes (Evans, 2013). In their review of the existing literature regarding student feedback, Santhanam, Ashford-Rowe, and Murphy (2017) noted that one of the challenges in collecting student feedback was gathering sufficient data so that appropriate conclusions could be drawn about instructor performance and areas for improvement. Merely collecting feedback from students about their instructors' performance is not sufficient in helping instructors improve their instructional behaviours.

Tang (2017) investigated the implementation of an online feedback system that incorporated various components such as student feedback, teaching experience, and teaching engagement. The system was designed to allow instructors and administrators to review data related to student feedback through an online dashboard. Tang (2017) concluded that this holistic means of gathering student feedback and instructor evaluations was effective in helping instructors improve their instructional skills. Although these conclusions are based on findings from a study conducted at a single university that may not be representative of other universities, they emphasize the value in using multiple methods to collect and analyze feedback about instructors' performance. Rather than relying solely on surveys or interviews for the collection of information on instructors, with little attention to how the data are reviewed and evaluated, diverse methods may better assist instructors in considering the feedback data they receive, which, in turn, may improve their instructional skills.

Feedback Sources in Higher Education

Before examining the larger issues of how student feedback is collected, it is necessary to briefly discuss the types of feedback sources that are used in higher education. This section will present a variety of sources of feedback that are readily used (Brinko, 1993). It is important to understand the different types of feedback as a starting point for examining how feedback can impact an individual faculty member who is attempting to use this information to improve his or her instructional skills and abilities (Kluger & DeNisi, 1996). Several of the most readily used sources of feedback in higher education are peer feedback, feedback from departments to the instructor, multisource or 360 degree feedback, feedback from the instructor to the student, and feedback from the student to the instructor. Each of these is examined below.

Peer feedback. Archer (2010) noted that peer feedback can be a means of allowing individuals to work together to support each other in the process of self-evaluation and self-improvement in one's professional environment. In this regard, peer feedback can be thought of as the process whereby two people at the same level of power provide continual and ongoing performance evaluation and information to each other. It also includes noting where professional performance improvements can be made. For example, two medical students or two physicians who work together in a clinical setting might provide feedback to each other on a regular basis. Here, the idea is that because these individuals work together closely and regularly in a similar environment, they witness each other's professional behaviours and actions. Consequently, they are well suited to provide feedback and evaluation to each other about these professional behaviors and actions, rather than having such feedback and evaluation come from people who may only see them on a semi-regular basis or merely when evaluations are taking place.

Feedback from departments to the instructor. Academic departments in colleges and universities are a source of feedback for their instructors (Murray, 1997). However, this feedback is often used more as a performance measurement tool than as a source for helping instructors improve their performance. For example, an academic department may provide feedback that includes different types of data, such as student feedback, evaluations from other instructors, and information about publications and other academic work. The goal in providing such feedback to instructors is certainly to attempt to improve their performance. Additionally, departments may also collect and provide feedback to instructors as a means of attempting to predict which instructors will exhibit the types of professional behaviors that are considered desirable and which instructors will not, thus requiring further professional guidance (Beran et al., 2007).

Multisource or "360°" feedback. The idea of providing feedback from multiple sources, such as from peers, students, and employers, has been used in industry and business for decades, but is relatively new within medical education (Schartel, 2012). The idea of multisource or 360 degree feedback is that a person's feedback and evaluations are obtained from peers, subordinates, supervisors, and others with whom a person may work on a regular basis. These sources of information are viewed as best suited to providing a complete, or 360 degree evaluation of a person's professional actions and behaviours (Berk, 2009). Within higher education, multisource feedback is viewed as a type of feedback that can be used by instructors to better understand their performance. This type of feedback is based on the totality of an instructor's professional actions and interactions—in the classroom, with peers, with students, and with supervisors—rather than only in one area of their professional lives (Hitchcock, Stritter & Bland, 1993).

Feedback from instructor to student. The evaluation and feedback that an instructor provides a student is also a common source of feedback in higher education. An instructor may report on the quality of a student's academic work to help the student identify areas of weakness with the goal of improving academic performance (Navajothi, Raadhika & Susila, 2016). Instructors may additionally provide a broader type of feedback related to a student's performance in an apprenticeship program or in a professional setting, such as to medical students in a clinical setting. Such feedback is intended to help students improve their professional or on-the-job skills (Arnold, 2016; Telio, Ajjawi & Regehr, 2015), as well as to help students identify areas for improvement.

Feedback from students to their instructors. Correspondingly, students' feedback to their instructors is an important tool in helping instructors examine their performance and work to improve their instructional practices and behaviours (Hewson & Little, 1998). Within higher education, student feedback to and evaluation of instructors is widely used to measure instructor effectiveness, and administrators extensively employ it in making decisions about course content, course topics, and even instructor promotion (Richardson, 2005). It can be argued that, currently, student feedback is the most important source of feedback used in higher education to improve teaching performance and course quality. Students observe instructors' performance every day, which provides them with exposure to all elements of an instructor's teaching style. Thus, similar to peer evaluations where peers are arguably one of the best evaluation sources because they frequently observe each other's professional performance, students also regularly witness their instructor's performance. Consequently, students may also be considered one of the best sources for feedback, especially if they are trained on how to provide effective feedback. On the other hand, other researchers such as Seldin (1989) have argued that students are not

qualified to critique course content because they lack the more extensive knowledge of a subject area to assess if an instructor has presented relevant or outdated course content or not. However, in their study exploring the type of information instructors find useful from student evaluations, Safavi et al. (2013) found that instructors do need information from student feedback that relates to their efforts to enhance the learning environment of students. Certainly, students would be able to judge characteristics such as the clarity of course content. Hence, students can provide valid feedback based on their experiences that they are themselves qualified to judge.

Because of the importance of student feedback in the evaluation of instructors, it is worthwhile to more closely examine the existing research on student feedback to their instructors. This includes its use in higher education and problems that may exist in understanding how to collect and use student feedback to instructors in higher education.

Student Feedback and Student Evaluation

Before examining the literature regarding student feedback in higher education to instructors, it is important to note that people use the terms *student feedback* and *student evaluation* synonymously within the academic literature. Indeed, as Robinson and Celuch (2016) have noted, we should view both terms as having the same meaning. Some researchers or academics may choose to specifically use one or the other term as feedback and evaluation can appear to convey different connotations when evaluating the performance of instructors, and in making decisions about their performance. For example, in some contexts, student evaluation may appear to be more formal or more systematic than student feedback, such as when medical students evaluate their instructors during a preceptor program (Schwiebert & Davis, 1993). Thus, in such contexts, these evaluations can appear to be a more important process than that of gathering student feedback. However, student feedback is not less formal or less important than a

process identified as student evaluation. As a result, throughout this study, student feedback and student evaluation will be used interchangeably, and for the purposes of this study, should be viewed as having the same meaning. Following from this, it is important to examine the definition of student feedback put forward in the published research.

Purpose of Student Feedback

To ensure the optimal use of student feedback in higher education, it is necessary to understand its purpose, its benefits, and some of the potential issues surrounding it. As to its purpose, Dewald (2016) argued that, based on student needs, feedback can be collected from students to make changes to a course or the way in which instruction is provided, and to discover student satisfaction with how technology is incorporated into courses and how homework is assigned. Darwin (2016) further explained that colleges and universities have two broad motivations for collecting student feedback: (1) to increase teaching quality and related practices and (2) for quality assurance regarding instructors and curriculum. In this way, student feedback serves as a means for universities to not only monitor student perceptions about their instructors, but also as a means of improving the instructional practices of instructors. Even more, student feedback to their instructors allows universities to demonstrate to students, who are also their customers, that they take student perceptions and concerns seriously regarding instructional practices and the professional behaviours of instructors (Josefson, Pobiega & Stråhlman, 2011). Thus, with feedback to their instructors, students are given the chance to affect the decisions that instructors and administrators make about courses, course content, and the professional actions and behaviours of the instructors.

Cleary, Happell, Lau, and Mackey (2013) further noted that students' opportunity to provide feedback allows them to appraise instructors and administrators about whether the

learning process in a class has been effective in ensuring the best learning outcomes for students. In this regard, student feedback to instructors can be an important part of the larger planning process for an academic department or an entire university based on how students perceive the learning environment and the effectiveness of the instruction provided. On the other hand, university administration must also take into consideration how instructors might feel and react in regard to giving students the authority to evaluate them and how instructors perceive using student feedback to improve the learning environment (Wachtel, 1998). How these issues impact the role of administrators and the faculty development unit are discussed later in this chapter.

In the end, the most important purpose for student feedback is to identify the strengths and weaknesses in the instructional and professional performance of instructors in higher education (Safavi et al., 2013). The data and information collected from students can be used to assess how course content and instructional practices might be improved to enhance the learning experience of students. In this regard, student feedback to their instructors is an important source of information about how colleges and universities can better serve their students.

Formative and Summative Student Evaluations/Feedback

Student evaluations can be further grouped into two categories—formative or summative. On the one hand, a formative evaluation is conducted through gathering feedback from students to support improvements in an *ongoing* teaching and learning context. On the other hand, summative evaluations provide a tool to measure the overall success level or proficiency of instructor performance and course quality *at the end* of an instructional unit (Bienstock et al., 2007). Accordingly, using both formative and summative evaluations may provide the most

comprehensive information about teaching ability to inform instructional improvement (Diekelmann, 2004).

Student Feedback on Teaching in a Classroom Setting

Classroom instruction is the most common and traditional type of college and university instruction, so it is important to examine whether student feedback is related to improvements in instruction and course quality. In one such study, Kinash et al. (2015) conducted a case study of instructional practices at seven Australian universities and concluded that their collection of student feedback was related to improvements in classroom instructional quality. However, a main limitation of the study was that it employed a case study methodology and involved only Australian universities, thereby restricting the generalizability of the results. Nonetheless, it is important to acknowledge that collecting student feedback alone may not be enough to improve instructional and course quality. In fact, the concept of student feedback may need to include university administrators who support and encourage student feedback, as well as promote it with their faculty. To illustrate, Seldin (1989) explained that in order for student feedback to be an effective source of information, there must be a larger culture within universities in which faculty, department heads, and administrators take the information seriously and use that information to enhance classroom instructional methods. In such an environment, universities can use negative, as well as positive student feedback to make adjustments to classroom instruction so that student expectations and needs for high levels of learning can be achieved. It is not surprising that having a larger system of support could both encourage and contribute to more effective instructional improvements.

The following sections will review student feedback for two types of teaching. The first is traditional lecture-based, followed by problem-based learning.

Lecture-based feedback. Studies have found that when students provide *specific* information about how classroom instruction can be improved, changes in classroom practices and behaviours can occur (Tikoo, Gupta & Geeta, 2015; Tuckman & Oliver, 1968). Researchers such as Shankar, Rose, and Toor (2016) and Stillman, Gillers, Heins, Nicholson, and Sabers (1983) have specifically investigated the relationship between student feedback and course improvement as it relates to lecture delivery. The findings from these studies indicate that students can identify and communicate through student feedback worthwhile areas for improvement in instructor performance and classroom teaching.

Interestingly, some research also signals that changes in instructional outcomes may be moderated by student satisfaction. Specifically, some researchers have noted that the gap between student expectations and the realities of classroom instruction may reduce student satisfaction, but that student feedback can fill the gap between expectations and reality. For instance, Blair's (2017) study of first-year British university students found that some students' expectations, such as a desire for collaborative learning, may not meet the realities of lecture-based classroom instruction. Thus, having such discrepant expectations would reduce student satisfaction**.** Consequently**,** given the research regarding the benefit of student feedback in the classroom setting and the potential gap identified between student expectations and classroom realities, further research about factors that could potentially affect the use of student feedback in traditional classroom lectures would be beneficial. Such research should specifically examine what factors may hinder or enable students in providing accurate and relevant feedback that reflects their expectations, and explore how instructors can address any discrepancies between student expectations and the realities of classroom instruction.

Problem-based learning. The importance of student feedback for improving the performance of instruction in PBL classrooms has also been demonstrated. PBL is widely used in medical schools, and involves small groups of students working together to use communication and problem-solving skills to increase their knowledge (Parikh, McReelis & Hodges, 2001; Shankar & Nandy, 2014). In this type of teaching method, the student is considered to be at the center of the classroom and learning, and therefore directs the learning. Because of the greater engagement of students during PBL sessions, some researchers have questioned whether student feedback can provide any useful information to instructors, as they do in lecture-based learning environments. However, in a study involving student feedback from junior medical students, researchers found that the students were able to identify specific characteristics they perceived as important for PBL instructors (Mayo, Donnelly, Nash & Schwartz, 1993). Students identified the importance of instructors helping identify important issues as part of the PBL scenarios and providing feedback to students while also encouraging feedback among group members (Mayo et al., 1993). Thus, this study demonstrated how students were able to provide useful feedback to their instructors for this type of teaching method. However, because there is greater student engagement in PBL versus the traditional classroom lecture style, it would be beneficial for student feedback to be collected continuously throughout a semester or teaching period in order to be the most effective for instructional improvement. This observation was made by Hendry, Cumming, Lyon, and Gordon (2001) who investigated student feedback in a PBL learning environment. They argued that an instructor's performance can improve and be enhanced, based on the consistent collection of student feedback.

Student Perceptions About Providing Feedback to Instructors

One issue that can impact the effectiveness of student feedback in higher education is the perceptions of students regarding providing feedback about their instructors. Unfortunately, there appear to be few studies in which researchers have investigated this topic. In one such study, Chen and Hoshower (2003) investigated student perceptions of and motivations for giving feedback to instructors in their study of a sample of freshman and senior students at a midwestern U.S. university. Chen and Hoshower found that students were more often motivated to provide instructor feedback to improve teaching and the format and content of courses, but less motivated to provide feedback to impact decisions about instructor tenure, promotion, or salaries. In another study, Puska, Ejubovic, and Beganovic (2016) conducted research involving 84 university students in Slovenia about feedback toward instructors. The researchers found that there was a difference in the feedback based on differences of expected and perceived quality of instruction, student satisfaction, and the loyalty of the students toward the school. While this study was conducted with a relatively small sample size at a single university in Slovenia, the results show that student feedback can be impacted by student expectations and perceptions about the school itself as well as the instruction they receive from teachers. While these two studies are the only recent studies that could be found in which student perceptions about giving feedback were investigated in a broad sense, it can be argued from them that student characteristics or qualities may be important factors that can impact the effectiveness of providing feedback in higher education. In this regard, some of those potential factors deserve more examination and are discussed in the next section.

Perception differences between novice and advanced students. One of the factors that may impact student feedback is whether the student providing the feedback is more of a novice

student, or an advanced student, as each may have different perceptions about its value. Studies on this issue are limited, but student status may affect the type of student feedback given. In one study, Murdoch-Eaton and Sargeant (2012) compared the perceptions of novice and more advanced students about receiving feedback in a study of 68 medical school students in the United Kingdom. The more novice medical students viewed feedback as being passive, and thus not really helpful to them. In contrast, more senior medical students perceived that receiving feedback informed their personal development and learning needs. Although this study examined novice and advanced students' perceptions about receiving feedback, it also raises questions about whether there are differences between novice and more senior students in their attitudes towards providing feedback to instructors.

Perception differences based on gender. Researchers have also found that gender differences exist regarding feedback preferences and the way in which feedback is provided (Evans & Waring, 2011). For example, Centra and Gaubatz, (2000) found that female instructors received higher ratings from female students than from male students, while male instructors received similar ratings from both male and female students. Yet, Ahmadi, Helms, and Raiszadeh (2001) found in their study of business students that the students did not provide different feedback based on their own gender or on the gender of their instructors. Based on these studies, one potential area for further investigation is whether gender differences exist in providing feedback based on the subject area of the students and instructors.

Instructors' Perceptions of and Reaction to Student Feedback

Another important issue regarding student feedback is the way in which instructors perceive feedback about their performance. Although university instructors argued that external assessment by others is an important part of the professional development process (Epstein,

Siegel & Silberman, 2008), giving students the authority to evaluate their instructors could cause instructors to react in different ways. For example, instructors who receive negative feedback may become sad or angry, which may potentially have a negative impact on their instructional performance. Wachtel (1998) also found that instructors may oppose the use of student feedback if it is used for tenure and promotion purposes, and that it could impact their job satisfaction and morale. However, Seldin (1989) found that when administrators use student feedback as part of a process for improving instructional performance, then instructors look forward to receiving student feedback and integrating it into their instructional practices.

In his research about the responses of instructors to student feedback, Arthur (2009) argued that instructors have four types of responses to the student feedback they receive. First is to *tame* the students, meaning that instructors feel that they can respond to student needs. Second is to *reframe*, which is to improve their professional skills. Third is *blame,* which is to criticize the students and believe that no professional change can occur. Fourth is *shame,* which is to feel at fault for negative feedback from students, but to also feel that nothing can be done about it. In this regard, it appears that instructors, may use student feedback to influence their personal development or they may ignore it. Indeed, Watling, Driessen, van der Vleuten, Vanstone, and Lingard's (2012) observed that instructors can perceive student feedback to them as either positive or negative, based on an instructor's personal attitudes and thoughts.

Overall, the existing literature on how instructors perceive student feedback seems to lack specific information, and instead indicates that instructors perceive student feedback based on their own personal perceptions of themselves and the fairness of the feedback that is received (Chan et al., 2014). However, while these studies are important, most also do not provide information about whether instructors actually use feedback to improve professional

performance, as well as how they use the feedback. Consequently, researchers identified some factors that could improve the effectiveness of using student feedback for both instructors and students, which are discussed in the next section.

Factors that can Improve Student Feedback Effectiveness

An underlying theme throughout the literature is that there are a variety of factors that improve the effectiveness of student feedback. For example, how the student feedback is collected, the content of the student feedback, and even how the student feedback is analyzed can all impact its effectiveness. Thus, it is necessary to discuss these factors to better understand how they may improve effectiveness of student feedback, as well as how feedback is received by instructors in higher education.

The Content of feedback. It seems logical that feedback, to be effective, should contain concrete, specific, and accurate information. Feedback that is specific and clear can be informative to instructors, compared to vague and general feedback (Liden & Mitchell, 1985). The content of the feedback should also have specific goals and provide sufficient information about an individual's performance to help in achieving the desired outcomes for giving the feedback (Sachdeva, 1996). Therefore, the quality of the content of feedback can impact the effectiveness of the delivered feedback. To demonstrate, Oon, Spencer, and Kam (2017) explained that student feedback evaluations are often created to obtain information that is not directly relevant to the reason that the feedback is collected. For example, students may be asked to provide information about an instructor's interactions with students. Administrators may then use the information to make decisions about course content and whether students feel that the instructor is presenting course content in a meaningful way. In this regard, the feedback is not relevant to the way in which it is being used for decision-making in the university.

Many higher education institutes also use a generic survey for all student feedback in all faculties. However, an argument could be made that using a generic form or survey for all students in a university to evaluate all of their instructors will not produce accurate data that can be used to encourage professional development among instructors and improvements in course content. The instructional strategies and methods employed that are used with medical students are different from instructional strategies and methods employed for sociology students or music majors, which may require different ways of gathering feedback. As such, medical instructors may need feedback that applies to not only classroom instruction, but also interactions with students in a clinical setting who are learning how to interact with patients (Walsh, Armson, Wakefield, Leadbetter, & Roder, 2009). Thus, the approach that is taken to determine the content of the student feedback may need to be more specific to the learning environment relevant to each department or area of a university. Otherwise, content may be collected that is of no relevance for the reason it was collected.

How feedback is delivered. Feedback can be delivered through various modes such as orally, in writing, via statistical or graphical methods, and in a structured, unstructured, or computerized format (Brinko, 1993). However, different methods for delivering feedback can impact its effectiveness. For example, the most common approach for delivering feedback to instructors is to provide oral or written feedback (Sachdeva, 1996). Providing feedback orally sets the stage for opening a dialogue between the evaluator or mediator, thus, affording the opportunity to gain more insight into a situation (Sachdeva, 1996). Similarly, written feedback can serve as the basis for further discussions, and has the added benefit of serving as documentation to be reflected upon over time; however, it does require significant commitment of time to complete (Sachdeva, 1996). While different methods of providing feedback can be

useful across situations, some methods can prove inadequate in attempting to clarify the point being identified.

Student feedback can also be collected in a variety of ways, from written surveys to verbal and small group discussions to structured or unstructured interviews and with computerized evaluations (Hennessy & Forrester, 2014). Surveys are the most often used method for obtaining student feedback of instructors because they are relatively easy to administer to a large number of students (Richardson, 2005). However, in recent years, the use of computerized feedback systems have become more widely used, and students have reported preferring such systems because of their comfort in using technology (Zou & Lambert, 2016). Yet, a noted problem with computerized feedback systems is that instructors have reported a lack of interest in using them to review feedback (Debuse & Lawley, 2016). Rienties (2014) found in his research involving 104 university faculty members that instructors were reluctant to transition to the use of computerized feedback systems. This difference is problematic given that research has shown that students are more motivated and engaged when they utilize computerized feedback systems as compared to traditional written or verbal feedback methods (Baleni, 2015). Thus, while students may prefer providing feedback using one method, it is equally important to consider instructor preferences in receiving feedback. It is particularly critical if administrators wish students to be willing to provide feedback, as well as for instructors to receive and use the feedback.

Who gives the feedback. Another factor that has been identified within the academic literature regarding the effectiveness of student feedback is who gives the feedback. Safavi et al. (2013) explained the examination of student feedback as a systematic process within a university. In this process, instructors receive information about the type of feedback collected

from students, as well as how the feedback should be interpreted. Students usually lack the

expertise needed to evaluate specific areas of the course such as curriculum development, course

design, and administrative requirements. Thus, an instructor is more likely to accept the

evaluation judgment of someone other than the student, such as a mediator, who reviews the

evaluation and discusses it with the instructor (Brinko, 1993). The role of the mediator is to help

the instructor interpret the results of the student evaluations obtained, which may maximize the

effectiveness of using student evaluations (Knapper & Piccinin, 1999). The use of a mediator

can also be effective in increasing the likelihood of instructors utilizing the feedback to improve

instructional practices. In this delivery method, the examination and delivery of the feedback

becomes more of a coaching and learning process, rather than as a threat or a university tactic

trying to find fault in its instructors (Penny & Coe, 2004). Furthermore, using a mediator to

collect and examine student feedback could be part of a larger process wherein the mediator

takes into account other issues, such as instructors' teaching loads and their research activities.

Mediators may also provide recommendations for action based on that feedback (Hulpiau,

Masschelein, Der Stockt, Verhesschen, & Waeytens, 2007). Specifically, instructors may take

the feedback more seriously, and may look forward to receiving it, rather than viewing it as a

chore that is required of them that provides little benefit (Overall & Marsh, 1979). Various

personnel could take on the role of mediator, such as educational developers and academic

colleagues of instructors (Knapper & Piccinin, 1999). As studies have indicated, tailoring the

student feedback process to the needs and desires of instructors affects whether student feedback

is effective at improving instructor performance that will benefit student learning.

Clarity of the feedback system. Clarity about the feedback system and why and how it

is used is vital for student feedback to be effective (Cornell, 2014). That is, both students and

instructors must be aware of the feedback process and properly educated about how feedback is used (Cornell, 2014). The feedback process cannot be thought of as only collecting surveys and giving the results to instructors. Instead, the feedback process should be planned to be used effectively to meet students, instructors, and institution needs (Watson, 2003). This process includes informing students about why their feedback is being collected and the purpose it serves in educating instructors about the importance of the feedback and how it is used.

Shah, Cheng and Fitzgerald (2017) explained that one of the concerns raised within academia is whether students are an *informed* stakeholder group, able to provide feedback that affects the professional lives of instructors and of the university. In this regard, clarity is needed in the feedback process to educate students about the feedback they provide, the type of feedback that is desired, and how that feedback will be used. In this way, students can become informed stakeholders in the process of enhancing instructional practices and course content.

However, it must be reiterated that instructors must also be educated about the feedback process (Cornell, 2014). The burden of understanding the feedback process falls not only to the students but also the instructors. The assumption should not be made that instructors automatically understand the feedback process or why student feedback is given so much weight within the decision-making process of a university. Instead, achieving clarity about the feedback process is paramount and can be achieved by educating both students and instructors, as well as involving them in feedback processes.

The importance of receiving timely feedback from students. One other factor that has been identified within the academic literature as relevant to the effectiveness of student feedback is the timeliness in which it is received. Yet, the question of *when* feedback should be given has received scant attention in the literature compared to who should give it and what the content

needs to be (Brinko, 1993). Bergquist and Phillips (1975) suggested that feedback is most ideal when given as soon as possible after the instructional performance. Hattie and Timperley (2007) argued that providing timely feedback to instructors can help improve instructor performance, which could enhance the opportunity to be reflected back to students immediately. Obviously, neither instructor nor student will benefit from feedback delivered long after a semester's end.

Hassanein, Abdrbo and Al Ateeq (2012) additionally recommended that student evaluations be appropriately introduced more than once a semester. Studies have demonstrated support for the practice of providing mid-term evaluation to instructors, and its effectiveness for instruction improvement. For example, Cohen (1980) found that at term-end, students whose instructors received mid-term feedback rated their instructors higher as a group compared to students whose instructors did not receive mid-term feedback. Another study similarly showed that students had a positive attitude about the course, both in its cognitive aspects and in pursuing further studies after course-end, when instructors received mid-term feedback (Overall & Marsh, 1979). Moreover, Dewald (2016) explained that he collected feedback at the mid-term of his courses, rather than at the end. This timing allowed him to make changes to a course if students indicated that they were having problems learning the material or with the way the material was presented. Thus, the timeframe during a course when feedback is given and received is important. Specifically, it may impact not only how students perceive a course, but also whether changes can be made so that the most effective learning can occur for the benefit of student outcomes (Bayerlein, 2014).

Diekelmann (2004) argued that by collecting student feedback early in a course, rather than waiting to the end —as is often the case— instructors can help students feel like partners in how a course is conducted. Furthermore, Diekelmann explained that by collecting feedback

early on in a course, instructors may find a difference between reality and their perceptions about how the course is progressing. For instance, while an instructor may believe that a course is going well and that students are satisfied with how it is being conducted, student feedback may reveal that students have concerns about how course information is presented and organized. If student feedback were not collected until the end of a course, then the instructor would be unable to make course changes and corrections. Students would be discontent and not learn as much as they might have otherwise. Thus, for most educational purposes, more immediate feedback seems preferable for the implementation of quick modifications and improvements on instructional performance, thereby increasing benefits to student learning and satisfaction.

Although researchers have argued about the importance of timely student feedback, there are few empirical studies about the impact of timely student feedback on the effectiveness of feedback or its impact on instructional practices in higher education. Consequently, the benefits of timely feedback from students is largely theoretical in nature. Although it is assumed that timely feedback is important for instructors to make course changes, research has yet to show that instructors use feedback collected during a course to make immediate changes. Furthermore, this researcher could not find any research regarding what type of feedback should be collected during a course that might best impact instructional practices. Nor could this researcher find information about what timeframe is best for students to provide feedback to instructors about instructor performance or about the clarity of course content.

Thus, based on the literature above, it can reasonably be concluded that when students provide timely feedback, they benefit as a result of feeling more engaged with both the course and their instructor, and by being challenged by the teaching. Timely feedback also provides instructors with timely information about any difficulties students are having with the

instruction, and the opportunity to examine whether alternative course content or teaching practices are needed (Ward, 2016). In fact, instructors have noted that timely feedback is useful so that they can assess student perceptions of a course and whether changes should be made to benefit student learning (Dewald, 2016; Diekelmann, 2004). Yet, as the studies in this section have shown, researchers have not been able to say with certainly that timely feedback is effectively used. Thus, more research is clearly needed on a larger scale across universities to determine how timely feedback affects both students and instructors.

The role of administrators and the faculty development unit. An important issue in student feedback is the role that administrators and faculty leaders play in accommodating to factors that affect the effectiveness of the feedback that students provide to their instructors. Administrators must ensure that the student feedback process is undertaken appropriately so that the data collected are meaningful and pertinent for making decisions that will enhance the learning environment (Beran et al., 2007). Ideally, administrators should be part of the data collection process to ensure that student feedback to instructors becomes a systematic part of the larger development and improvement efforts of a university (Collett, Hanks, Watson & Davies, 2017). This process includes regularly examining the methods used to collect student feedback to determine if they are valid for meeting the needs of the instructional processes within the institution, as well as if the received feedback is useful for decision-making (Kember, Leung & Kwan, 2002).

Additionally, administrators should address the questions and concerns of instructors and treat them as partners in the student feedback process (Dekker-Groen, Van der Schaaf & Stokking, 2015). Administrators must also ensure that faculty development is carried out not only to understand the importance of student feedback, but also to assist instructors in coping

with student feedback (Lutovac, Kaasila, Komulainen & Maikkola, 2017). Consequently, instructors need to receive training on how to constructively integrate student feedback so as to improve their teaching and further their professional development.

Wachtel (1998) found an additional factor that administrators need to be aware of: compulsory student feedback may contribute to grade inflation. To illustrate, in 1994, Stratton, Myers, and King set out to explore an unanswered question in the literature concerning whether instructors modify their behaviour by giving higher grades to placate students when student evaluations are introduced in a university. They pointed out that three different researchers in 1975 had all developed theories suggesting that, "faculty, acting in their own self-interest, will change their grading behavior in response to this change in the use of [student evaluations]" (p. 5). The researchers conducted their study at the University of Akron and examined individual student grades given in either micro- or macro-economics courses ranging from the fall of 1981 to the spring of 1990. This time period covered course grades given before and after student evaluations were initiated by the university. By the fall of 1986, the economics department had introduced mandatory student evaluations, making them a required part of being promoted and receiving tenure (Stratton et al., 1994). The results found that instituting mandatory student feedback to teachers had "changed faculty teaching/grading behaviour" (Stratton et al., 1994, p. 12). However, not all instructors had changed their behaviour. Originally, the behavioural change caused grades to increase 11 per cent, but this change decreased with time (Stratton et al., 1994). Stratton et al. (1994) concluded that administrators should be aware that student evaluations may prompt instructors to modify their behaviour, but administrators need the ability to "measure and identify this change" to prevent "contamination" of the measurement process (p. 12). On the other hand, if it can be proven that the benefits received from student evaluations

incent instructor behaviour that aligns with administrator objectives, then student feedback can be used as both a measurement and inducement for behaviour change (Stratton et al., 1994).

Use of Mixed Methods in Student Feedback

Too often, research tends to be divided into quantitative or qualitative methodologies with purists from either side arguing for the supremacy of one or the other paradigm. On one hand, quantitative theorists mandate that research should be objective, and that the causes of social outcomes can be determined reliably and validly (Johnson & Onwuegbuzie, 2004). Qualitative purists, on the other hand, argue that inclusion of qualitative methods is critical in research because research draws on the observations and meanings of many individuals and people construct meaning in different ways. Thus, generalizations that do not take into effect the context of people's opinions will not provide a full view of the causes and effects of what is being explored (Johnson & Onwuegbuzie, 2004). Therefore, a mixed methods approach could more effectively draw on the strengths and minimize the weaknesses of both approaches.

Using a mixed methods methodology to understand the effectiveness of student feedback provides the ability to more thoroughly examine the issue through qualitative and quantitative means (Ludvigsen, Krumsvik & Furnes, 2015; Kruidering-Hall, O'Sullivan & Chou, 2009). With a mixed methods approach, different types of data collection methods can be used to obtain a large set of data that more effectively answer questions about student feedback effectiveness in higher education (De Beer & Mårtensson, 2015; Kamp, Dolmans, Van Berkel & Schmidt, 2013). Following are some examples of studies using mixed methods methodology demonstrating that using different types of data lead to the clarification of findings and a comprehensive understanding of the outcomes.

Qualitative Results Enhance the Quantitative Results

Salamonson et al. (2015) conducted a mixed methods study to investigate the satisfaction of nursing students in Australia regarding their clinical placement experiences. Quantitative data were collected through an online survey that also included open-ended questions for qualitative data. The researchers found that the students were generally satisfied with their clinical placements. However, the qualitative data revealed that nursing students whose first language was English were more likely to be dissatisfied with their clinical placements. This finding would not have been revealed without exploring student views through qualitative methods.

Similarly, Ahlborg et al. (2015) conducted a mixed methods study to examine the value, flow, and self-efficacy related to individualized feedback during laparoscopic training. The study was conducted with 16 medical students randomly placed in an experimental group who received feedback during training and a control group who received no feedback. Quantitative data were collected using instruments to measure self-efficacy and flow. Qualitative data from group interviews were also collected. The researchers found that self-efficacy improved in both groups, but the qualitative data revealed that students in the control group reported having more fun in the training, while students in the experimental group reported being more concentrated on the task and more anxious about their performance. This study points to the fact qualitative data can provide important and rich insights for better understanding of the quantitative data.

Qualitative Results Used to Explain Quantitative Results

Egelandsdal and Krumsvik (2017) conducted a mixed methods study to investigate the use of digital technology as a student response system (i.e., student handheld clicker) in lecture-based courses. Quantitative data were collected from live surveys conducted during the series of lectures, while qualitative data were collected by conducting focus groups with students after

completion of the lecture series. During the lectures, students were asked questions about the subject, discussed their answers with peers, and then independently submitted their responses using a remote clicker. The lecturer then discussed the answers. The researchers' goal was to investigate whether students felt they had received formative feedback from this process, and how they viewed this feedback. The quantitative data revealed that the students had increased awareness of learning using the response system, that 90% of the students perceived receiving formative feedback during the lectures, but only just over 50% felt that the peer discussions were helpful. The qualitative data from the focus groups revealed that many students perceived the peer discussions to be less than helpful because they sometimes lacked peers for discussion, or considered peer discussions to be of limited quality.

Mixed Methods in Student Feedback to their Instructors

In reviewing the literature, the lack of mixed methods studies became apparent concerning researchers investigating student feedback in general to their instructors, and in medical education, specifically. In fact, no studies could be found regarding student feedback to instructors in which mixed methods had been used. Even more rare was the use of mixed methods methodology in medical education research (Kornegay et al., 2017). The use of mixed methods is recommended because of its ability to increase the validity and applicability of findings due to its more comprehensive nature of examining both qualitative and quantitative data (Schifferdecker & Reed, 2009). By collecting and analyzing both types of data, researchers can achieve a better understanding of relationships and phenomenon. This result aids researchers in drawing conclusions that have greater validity and utility in practice than if qualitative or quantitative methods alone are used.

Because mixed methods seem particularly useful in attempting to understand personal perceptions and attitudes, which is an important part of faculty development efforts (Steinert et al., 2006), it is recommended that a mixed methods design be used in an investigation of student feedback to instructors. By using a mixed methodology of both qualitative and quantitative data collection and analysis, it will be possible to understand how: (i) accurate the student feedback is, (ii) instructors receive student feedback, and (iii) how instructors incorporate student feedback to improve instructional performance.

Studies on Student Feedback/Evaluation in Saudi Arabia

As noted in chapter one, although the NCAAA (2013) has acknowledged the importance of student evaluations, a study about student feedback by Al-Haqwi, Al-Wahbi, Abdulghani, and van der Molen (2012) noted that students' perceptions and understandings of the concepts behind providing valuable feedback remain deficient in Saudi Arabian universities. This limited understanding may be due to the limited research. No conclusive study has been conducted to date in Saudi Arabia to measure the *effectiveness* of student feedback, and to explore what *specific* factors might contribute to improving the quality and outcome of student evaluations.

In one of the few studies done in Saudi Arabia about post-secondary student evaluations, Al-Haqwi et al. (2012) explored undergraduate medical students' perceptions about barriers to providing and receiving feedback to instructors. This study revealed that almost half of the participating students believed that barriers to effective feedback existed (Al-Haqwi et al., 2012). These included an unclear system of feedback for both students and instructors, students' fear of retaliation by instructors, and instructors' lack of skills in providing effective feedback (Al-Haqwi et al., 2012). Moreover, while both students and instructors agreed on the importance of instructor evaluations, they tended to have different perceptions about the principles and

purposes of evaluation (Al-Haqwi et al., 2012). Consequently, the researchers concluded that because students did not understand the purpose and importance of feedback for instructor development, they were unable to provide effective commentary in their feedback.

Similarly, studies done in other Gulf countries about student evaluation may also offer insight into Saudi Arabian students' perceptions. For example, Aburawi et al. (2014) undertook a study in the United Arab Emirates (UAE), which has a similar education system to Saudi Arabia. In this study, the researchers explored the reasons for dwindling student participation in online evaluations of individual instructors. One conclusion the researchers reached was that both students and instructors need to receive proper explanation about the concept and rationale behind student evaluations to avoid overly subjective, irrelevant evaluations. These results are similar to those found in Al-Haqwi et al.'s (2012) study, pointing to the need for more education for students and instructors about student evaluations.

Al-Issa and Sulieman (2007) also conducted a study in the UAE to assess students' perceptions about their end-of-semester evaluations of teaching, to determine the extent such evaluations could be biased by external factors. The study revealed significant differences among student demographic groups concerning their perceptions about their own feedback. For example, student evaluations of their instructors could be influenced by factors such as a student's gender, the instructor's nationality or personality, the student's expectation of receiving a certain grade, and the student's opinion about what "knowledge" is (Al-Issa & Sulieman, 2007, p. 312). Junior students were also found to be more motivated to provide feedback than senior students (Al-Issa & Sulieman, 2007). Additionally, although students believed instructors may not take their evaluations seriously, they wanted to continue completing them, however, students did not take the evaluation process seriously (Al-Issa & Sulieman, 2007).

Another interesting observation emerged from Al-Rubaish et al.'s (2010) quantitative pilot study conducted in Saudi Arabia about developing a questionnaire for student evaluations of instructors' teaching effectiveness in the University of Dammam (UOD). The results showed that students tended to be honest and impartial in their evaluations, and it was concluded that students' questionnaire scores on instructors' teaching effectiveness should be viewed as valid and reliable, as well as concise and sufficient (Al-Rubaish et al., 2010). Nonetheless, it is recommended that there be further study exploring both students' and instructors' perceptions about the factors impacting student honesty when providing feedback, and instructors' utilization of the student feedback provided.

The few studies that have evaluated the *influence* of student feedback in Saudi Arabian universities have made it difficult to draw specific inferences or generalizations from the student data. Additionally, other barriers are present that could complicate the existing problem even more. For example, the studies done in Saudi Arabia have drawn their conclusions based on a restricted sample of participants from among the larger population size of post-secondary institutions. Specifically, in one study, only male students participated at the COM, Department of Medical Education, KSAU-HS (Al-Haqwi et al., 2012). Similarly, at the College of Nursing of the UOD, only female students were participants in the study. Thus, these narrower participant populations make it difficult to draw general inferences from the results, beyond the sample studied (Al-Rubaish et al., 2010).

Another gap in the literature regarding student evaluations in Saudi Arabia is the absence of studies employing a mixed methods design. The studies that have been conducted have relied on quantitative measures and lacked participants' narrative opinions and evaluations. This problem results in poor representation of social and cultural variables. Instead, by incorporating

qualitative as well as quantitative methods, issues can more deeply be investigated so as to provide a richer understanding of the topic studied. Aburawi et al. (2014) also suggested that integrating a mixed methods design could provide a more in-depth analysis and creative input from participants, resulting in a richer source of data for a study on student feedback.

It is most difficult to develop a consensus statement about the significance of evaluation and effective feedback given the limited number and type of studies conducted in Saudi Arabia. Still, this consensus is important, especially since students and instructors have had contradicting perceptions about the *influence* of effective feedback in Saudi Arabia (Al-Haqwi et al., 2012). Consequently, the study of the utilization of feedback may also need more intervention, given the social structure of Saudi Arabian society (Al-Haqwi et al., 2012).

Study Rationale

The effectiveness of student feedback on instructors' performance and student learning has been studied and presented in the literature. However, there appears to be scant information on the effect of student feedback in Saudi Arabia, and specifically, on the influence of timing on the effectiveness of students' feedback to their instructors. Given these substantial gaps in the literature and methodology, studying the impact of instructors receiving timely student feedback utilizing a mixed methods approach was determined to be a valid and useful endeavor. Therefore, the intention of this study was to specifically address these gaps in a Saudi Arabian university context through the use of a mixed methods embedded experimental approach. The quantitative portion of the study examined the effectiveness of timely student feedback to instructors, while the qualitative part of the study explored, through semi-structured interviews, the perceptions of students and instructors on student feedback in general, and timely student feedback in particular, in a Saudi Arabian university.

Aims of the Research

Given the research gap in Saudi Arabia, the goals of this research study were as follows. The first was to determine whether timely and appropriate feedback to PBL instructors is an important factor that directly affects teaching styles and the quality of teaching in Saudi Arabian universities. For the purposes of this study, timely feedback was defined as student feedback that was provided back to the instructor during a course or study block and where the same instructor was assigned to the same students for the duration of the course or study block. The second goal was to explore whether student feedback in general and timely student feedback in particular that was provided to the PBL instructor would contribute to faculty professional development.

Research Questions

The research questions for this study were as follows:

1) Do students perceive any difference in the quality of teaching between PBL instructors who have received timely feedback during the study block versus those PBL instructors who have received no feedback from student evaluations during the study block in a Saudi Arabian university?

2) What are PBL instructor perceptions about receiving suitable and applicable feedback on course evaluations to foster quality teaching and learning?

3) What are student perceptions about providing suitable and applicable feedback on course evaluations to foster quality teaching and learning?

4) What are the PBL instructors' and students' perceptions about student feedback on instructional performance in regards to making a difference in instructor performance?

Chapter Three: Methods

The purpose of this chapter is to describe the methods employed for data collection and analysis in this study. First, an overview of the mixed methods approach to research design is presented, followed by the setting/context of the research and for the participants. Next, the data collection methods are discussed, then issues of privacy, confidentiality, and data handling. After this, the data analysis for both quantitative and qualitative data is described along with the mixed methods approach to data mixing. Finally, the rigour of the research methods is reviewed, followed by reflexivity and the ethical considerations and approvals.

Mixed Methods Research

Mixed Methods Overview

For this study, a mixed methods methodology that integrates a quantitative and qualitative approach was selected, since each method potentially complements the other (Johnson & Onwuegbuzie, 2004). There are various reasons why researchers might choose to use a mixed methods approach. First, researchers such as Creswell and Clark (2011) have argued that mixed methods research should be conducted when one source of data will not be sufficient to explain a phenomenon, or when a researcher needs another set of data to more fully explain the initial results. A researcher can also begin with a qualitative phase to explore a research question and then conduct a quantitative phase to examine whether the qualitative results can be generalized (Creswell & Clark, 2011). Also, a mixed methods approach gives researchers the ability to answer dissimilar research questions (Creswell & Clark, 2011), and to address complex research questions and problems with greater specificity (Bryman, 2006). Overall, mixed methods research provides multiple ways of exploring a phenomenon to provide deep insights into the research question(s).

Types of Mixed Methods Design

The designs for mixed methods approaches can either be fixed or emergent. Fixed mixed methods designs are established prior to beginning a study, while emergent mixed methods designs take place when a method is found to be inadequate (Creswell & Clark, 2011). When considering a study's fixed design, the researcher must decide if both methods are equally important in answering a research question, or if a qualitative method is more important than quantitative, and vice versa. Timing is also a key consideration. That is, the temporal relationship between the two data sets within the study must be considered, whereby timing can be sequential, concurrent, or completed in various phases that include both sequential and concurrent timing (Creswell & Clark, 2011). Finally, researchers must determine what approach they will use for combining and integrating the quantitative and qualitative portions of the study (Creswell & Clark, 2011).

There are six mixed methods designs that are normally used that provide a framework and rationale for ensuring that a study is well-designed (Creswell & Clark, 2011). The first four basic mixed methods designs are a convergent parallel design, an explanatory sequential design, an exploratory sequential design, and an embedded design (Creswell & Clark, 2011). The remaining two designs combine design elements together, namely transformative design and multiphase design (Creswell & Clark, 2011). The mixed methods design that was used for this study was the embedded experimental design. An explanation of this design as well as a brief explanation about the reasons for choosing it for this research study are presented in the next section.

Rationale for Using Mixed Methods (Embedded Design)

The purpose of using a mixed methods design for this study was to enhance the researcher's understanding of the effect on instructors of receiving timely feedback from students through exploring student and instructor perceptions about student feedback in general, and timely feedback in particular. Specifically, the embedded experimental design mixed method methodology was used, which is the most common type and includes embedding qualitative data within an experimental design (Creswell & Clark, 2011). The primary premise of this design is that having just one type of data is not satisfactory nor sufficient in providing a deep understanding of the findings. Thus, different research questions or objectives require the gathering of different types of data.

In this study, quantitative data were collected from student surveys and analyzed to determine the effect on instructors of receiving timely (i.e., mid-block) feedback from students, compared to instructors not receiving any mid-block feedback. Qualitative data were collected from students and instructors and analyzed to answer two secondary research questions within the primary quantitative study. These qualitative data provided an enhanced understanding of the quantitative results by exploring the perceptions of students and instructors about the overall effectiveness of student feedback in general, and timely feedback, in particular. Consequently, it was expected that obtaining this qualitative data would facilitate a better understanding of participant perceptions from those involved in the student feedback process, rather than receiving quantitative results alone.

Mixed methods approach. Both sets of data were analyzed concurrently; however, the qualitative data collection procedure occurred after the collection of quantitative data. The results from both data sets were then merged to determine how and why the secondary data

supported or augmented the primary data. The merged results were then analyzed by student and instructor gender, and then by advanced and novice students, to evaluate for convergent and divergent relationships between the results. The findings from analyzing the mixed methods data will be presented in chapter 4 and discussed in chapter 5.

Study Context, Setting, and Participants

Study Setting

The study took place in two phases: in Phase 1, the quantitative portion of the study was performed, while the qualitative portion was conducted in Phase 2. Both phases were undertaken during the 2016 - 2017 academic year in Saudi Arabia at the College of Medicine (COM) at KSAU-HS's main campus in Riyadh, during Block One, called the Foundation Block. This is the first block of the first academic year at the COM. This university was chosen because it represents a culture that is different from the Western Europe and North American populations typically used in this area of research, student enrollment is high, and students remain with their instructors over time, which allows longitudinal data collection.

Context for the Study

KSAU-HS, is a specialized medial academic university in Saudi Arabia with three campuses in three cities: the main campus is in Riyadh, and the other two campuses are located in Jeddah and Alhassa. Two of the campuses contain a COM (i.e., Riyadh and Jeddah), and all three campuses have a variety of colleges of health sciences. During the academic year, each COM delivers the same curriculum and courses simultaneously to medical students. Moreover, within an academic year, the curriculum is taught in specialized study blocks with progressively advancing content in each subsequent block. Consequently, the courses in each new block

continue building upon knowledge learned in that subject from the previous block. The length of the blocks varies from one to another, and within a block each course has a different end date. For example, this study especially focused on Block One (i.e., the Foundation Block), which is considered one of the longest blocks in the academic year at the COMs. During this block, some courses finish after week six or seven, while others conclude at the end of the block at week nine. Then, a one week break occurs between the ending of a block and the beginning of the next block. Students also have a summer break of approximately nine weeks in an academic year.

Within a block, two teaching methods are used with medical students: the first method is traditional lecture-based learning given by instructors and the second method is instruction through PBL. Lecture-based instruction is designed to be delivered to classes with a larger number of students. By contrast, rather than learning through instructor-driven knowledge, the aim of the PBL teaching method is for students to gain knowledge through small group learning and under instructor supervision. Here, students solve open-ended problems through discussion and critical thinking. Each PBL class is assigned to a specific and different instructor. This study focused on the PBL sessions in Block One, in which the same students had 21 separate PBL sessions with the same instructor. The study was conducted only during Block One because the researcher wanted to survey the same students who had been assigned to the same instructor during a Block. In other blocks that students took during the academic year, they would have been assigned to different PBL instructors.

Students accepted into the two COMs at KSAU-HS are separated into male-only or female-only classes. Male instructors teach the male classes while female instructors teach the female classes. Students are additionally characterized as either Stream One (S_1) (i.e., those who have enrolled in medical college directly after high school), or Stream Two (S_2) (i.e., students

who have already completed an undergraduate degree by the time they enroll in medical

college). Although S1 and S2 students take lecture classes together, separated only by gender,

PBL sessions are divided into separate classes by stream and gender.

Study Process

In each of Phase 1 and Phase 2, study participants (i.e., students and instructors) were

divided into control (C) and experimental (E) groups. In Phase 1, students in both the C and E

groups evaluated their instructors twice (the first evaluation was called Time One (T_1) and the

second evaluation was called Time Two (T_2). The T_1 evaluation took place mid-block in week 4

and the T_2 evaluation was conducted at the end of the block in week 8, before the final exams in

week 9. The researcher delivered the T_1 student evaluation results from the E groups as

structured feedback (the format for structured feedback will be explained later in this chapter) to

only the E group instructors during mid-block at week 5. For the study, the T_1 student evaluation

results from the E group were considered to be feedback that was delivered in a timely manner

from students to their instructors. However, the instructors in the C group received no timely

student feedback mid-block during week 5. Setting up a C group of instructors who received no

intervention allowed the researcher to have a baseline to compare both the C and the E groups to

assess the effect of instructors either receiving or not receiving timely student feedback, mid-

block.

Phase 2 of the study took place when Block One ended. For Phase 2, a selected number

of students and instructors who were involved in Phase 1 of the study were chosen to take part in

semi-structured, one-on-one interviews. More information about the participants in Phase 1 and

2 will be presented in the "Participants" section of this chapter while further details about the

research instruments will be discussed in the "Research Instrument" section of this chapter. A visual model of the study process appears in Appendix A1.

Goals for Phase 1 and Phase 2

The goal for Phase 1 of this study was to collect and analyze data from student surveys to assess what effect receiving timely student feedback mid-block had on instructor performance and course quality versus receiving no mid-block feedback. Then, the goal for Phase 2 was to assess the method of delivering and receiving feedback, and to gain a more thorough understanding of the reactions of both instructors and students about the effectiveness of student feedback in general, and timely feedback in particular.

Arrangement of Students and Instructors in PBL Sessions

In Block One, 22 instructors led 36 separate groups of students in the PBL sessions. There were 14 male PBL instructors and eight female PBL instructors. The lowest group size for female students was 12 students while the largest group size was 13 students. In contrast, the lowest group size for male students in both streams was eight students and the largest group was nine students. According to Cottrell et al. (2010), the minimum number of participants required to obtain a reliable rating should not be less than five students. Each male PBL instructor led two groups of male students, resulting in a total of 28 groups of male students taught by the 14 male PBL instructors. On the other hand, each female PBL instructor led one group of students, so female PBL instructors led eight groups of female students. However, as previously mentioned, all PBL student groups were divided by S1 and S2 students, as well as by gender. All PBL instructors also taught the same content during the study block.

These PBL instructors and their accompanying groups of students were divided approximately equally into an E group and a C group for the study. The E group consisted of 18 PBL groups of students in Block One with a total of 166 students led by 11 instructors, and the C group consisted of 18 groups of students with a total of 163 students led by 11 instructors. Table 1 provides the demographics for the C and E group participants.

Table 1

Demographics for C and E Group Participants in PBL

	E Group			C Group		
	Instructors	Classes	Students	Instructors	Classes	Students
Male	7	14	115	7	14	112
Female	4	4	51	4	4	51
S1	8	15	135	9	16	143
S2	3	3	31	2	2	20
Total	11	18	166	11	18	163

Participants

Participants in Phase 1. For Phase 1, a potential 329 first-year male and female medical students were recruited using convenience sampling. This was the total number of students enrolled in Block One at the COM in the main campus of KSAU-HS at Riyadh. Students were selected to evaluate all of the PBL instructors who were leading PBL sessions in Block One, which totaled 22 male and female instructors. Table 2 provides the demographic information for the proposed sample size of students who were recruited for Phase 1, broken down by gender, streams, and E and C groups.

Table 2

Student Demographic Information (n = 329)

		N
Gender	Male	227
	Female	102
Streams	S1	278
	S2	51
Groups	E	166
	C	163
E Group	Male	115
	Female	51
	S1	135
	S2	31
C Group	Male	112
	Female	51
	S1	143
	S2	20

Participants in Phase 2. It was anticipated that a select number of students and instructors from both the E and C groups would participate in one-on-one, semi-structured interviews for Phase 2 of the study. During this phase, purposeful sampling was applied to select the participants who could partake in individual interviews. In purposeful sampling, the researcher intentionally selects participants who have experienced the central issue being explored (Creswell & Clark, 2011). Within purposeful sampling, the researcher chose maximal variation sampling for this study wherein diverse individuals were chosen who were assumed to hold assorted perspectives on the issue being studied (Creswell & Clark, 2011). Hence, the researcher's selection criteria was based on the selection of one *or* two male students from each of the 28 male PBL session groups and one *to* two female students from each of the eight PBL female groups. This decision was made to ensure that a student from each PBL group was selected to take part in the interviews to provide his/her unique perspectives. It was thought this approach would provide a more diverse range of perspectives from each instructor's group. The

researcher decided that the minimum number of students to be interviewed should total at least 36; that is, at least one student from each group would be interviewed, depending on students' agreement to participate. Once the researcher had interviewed at least one student from each group, he planned to interview more students until the saturation point was reached, that is, when no new information was received from the student interviews. The researcher also chose at least six instructors from each of the C and E groups to interview, based on their agreement to participate. Once the researcher interviewed the 12 instructors, interviewing continued until saturation was achieved. The goal was to explore perceptions between instructors who received timely student feedback mid-block, compared to those who had not. The researcher also tried to ensure that both genders were included in each group, to determine if there were any differences in perceptions based on gender. Table 3 provides the sample size for instructor interviews, broken down by C and E group and gender.

Table 3

Instructor Demographics for E and C Groups (n=22)

		N
Total Instructors	E Group	11
	C Group	11
Gender	Male	14
	Female	8
E Group Instructors	Male	7
	Female	4
C Group Instructors	Male	7
	Female	4

Data Collection

Research Instrument Phase 1

In Phase 1, a 20 item questionnaire was used in both T_1 and T_2 of Block One to collect student evaluations about their PBL instructors. This questionnaire was adapted from a previous questionnaire used at the same college where this study took place. The original one was tested in a study by Al-Eidan, Baig, Magzoub, and Omair of the KSAU-HS Medical Education Department in 2012. The participants in Al-Eidan et al.'s (2016) study were 116 first year medical students in the Haematology Block at the COM, in KSAU-HS in Riyadh; 80 (69%) were men and 36 (31%) were women. In Al-Eidan et al.'s study, participants evaluated 27 questions about the study block including group dynamics in PBL sessions, the structure of the PBL sessions, and the quality of instruction. It was developed based on an in-depth review of the literature and it was validated by faculty (Al-Eidan et al., 2016). All items are rated on a 5 point Likert scale ranging from: (1) Poor, (2) Fair, (3) Good, (4) Very Good, (5) Excellent. The sample items included "Amount learned", and "Balance of participation." The questionnaire items were found to be reliable, with a Cronbach's Alpha of 0.91 (Al-Eidan et al., 2016). Moreover, no significant differences were noted between male and female participants, and although the questionnaire had originally been used for one specific block only, it could confidently be used in other blocks as well (Al-Eidan et al., 2012). This questionnaire was subsequently implemented and is still being used in the COMs at KSAU-HS (L. Baig & M. Magzoub. personal communication, February 2015).

Consequently, the current researcher adapted Al-Eidan et al.'s (2012) questionnaire for use in this study. This decision was based on the reliability and validity results they achieved when testing the questionnaire, and their confidence that the questionnaire could be used in other

blocks (Al-Eidan et al., 2012). Moreover, Al-Eidan et al. (2012) tested the questionnaire with first year male and female medical students at the same university where the current study took place. For the current study, the researchers modified some items from Al-Eidan et al.'s (2012) questionnaire to create a more relevant questionnaire that would meet this study's objectives. The intent was to measure reliability after the modification in T_1, to examine whether the revised questionnaire items had high reliability and were consistent with Al-Edian et al.'s results. Further testing of the measure was done by conducting a principal component analysis (PCA), and by measuring the reliability of the items in each questionnaire subscales. A total of four items were subsequently removed (items A7, A8, B4 and B6) following the PCA.

The revised questionnaire for this study listed closed- and open-ended questions. The close-ended questions consisted of 14 items in Part A about instructors' performance and six items in Part B about PBL session organization, for a total of 20 close-ended questions. These questions were measured on a 5-point Likert scale: (1) Strongly Disagree, (2) Disagree, (3) Undecided, (4) Agree, and (5) Strongly Agree. Then, three open-ended questions were asked: (1) students were asked to explain what they liked most about their instructor's performance, (2) students were asked what they would like to see changed in the organization and content of the PBL sessions for future classes, and (3) students were asked to provide any additional comments. Refer to Appendix A2 for the questionnaire form.

Research Instrument Phase 2

In Phase 2, one-on-one semi-structured, in depth individual interviews were conducted independently for both students and instructors. Separate semi-structured interview guides were developed for three groups: students, instructors in the E group, and instructors in the C group. The guides were developed for each of three groups based on the study research objectives and

the literature review that was performed prior to the start of the study. Each guide contained

open-ended questions, both general and specific, designed to encourage participants in each

group to reflect on their experiences. Each guide also was designed to gather any additional

comments or suggestions from the participants, and to raise awareness about the delivery and

receipt of effective student feedback in general, and timely feedback in particular. Refer to

Appendix A3 for the complete interview guides.

Study Consent Form

The consent form used in the study for both students and instructor participants provided

information about the background for and the purpose of the study. It was also explained that

their participation was completely voluntary, that there were no risks for participating, and that

their confidentiality would be protected. Participants were informed that their responses would

be kept private and that only the researcher would know the participant identities and contact

information. All participants were asked whether or not they agreed to be contacted for a

possible interview. They were also asked to sign their consent (or not) and to being tape recorded

for the interview session, if they agreed to participate in one. Only students were asked to

indicate on their consent form if they would agree to complete a questionnaire. Refer to

Appendix A4 for the student consent form and Appendix A5 for the instructor consent form.

Procedure

Phase 1. Before Phase 1 began, the researcher contacted the dean of the COM at the main

campus, KSAU-HS, and obtained permission to collect the data for this study. After granting

permission, the dean requested that Student Affairs assist the researcher in data collection.

Neither instructors nor students were informed ahead of time about the study.

Student Affairs subsequently assigned two assistants, a male for the male groups, and a female for the female groups, who would help the researcher, as required. These assistants helped the researcher book rooms, where the student participants would fill out their evaluation forms in week 4 for the T_1 evaluation, and in week 8 for the T_2 evaluation. Then, Student Affairs sent an email to all of the potential participants asking them to stay for a few minutes after their PBL sessions. On the day chosen for each group, the researcher and the Student Affairs assistant attended each PBL student group and explained the purpose of the study, to assure students that their participation was voluntary and their participation (or lack thereof) would not affect their performance (marks/grades) or treatment in the course. They were asked to evaluate their current instructors using the questionnaire. Students were directed to the classroom they should visit to fill out the evaluation forms that day. The researcher then visited each PBL student group classroom two more times during week 4 and week 8 to remind those students who had been absent and not completed the forms that they were available for filling out. This instruction provided those students who had been absent on the first day with an opportunity to fill out the questionnaire and for the researcher to seek the highest response rate possible for the study. A consent form that students signed before participating in the study was attached to each questionnaire.

Although the researcher and/or assistant distributed the questionnaire during mid-block and at the end of Block One to students in the E and C groups, the researcher immediately analyzed only the student questionnaires from the E group that had been distributed mid-block. This step allowed the researcher to provide timely feedback to the E group instructors during week 5, the mid-block exams week. For the final analysis, which took place after Block One, the researcher also analyzed the C group's student evaluation results for both the first and second

evaluations to compare the results of the first and second questionnaires between the E and C groups. However, these results were not shared with the C group instructors.

The E group student feedback results that were delivered to the E group instructors were the result of summing up how many students had chosen each Likert scale rating per close-ended question. For example, if an instructor received feedback from 8 students on a close-ended question, 5 out of the 8 students chose a Likert rating of 4 (i.e., Agree), and 3 chose a Likert rating of 2 (i.e., disagree), the instructor was shown structured feedback to explain this. Specifically, the instructor was informed that 5 students had rated him or her as "Agree" on that close-ended question, while 3 students had rated him or her as "Disagree" on that same close-ended question.

After the student feedback results were tabulated, as shown above for the close-ended questions for the E group PBL instructor, the three open-ended questions were summarized for student comments and all close-ended and open-ended results were transferred to a structured feedback form. The form consisted of a table including all of the questionnaire items with their corresponding 5-point Likert scale ratings, and how students had rated them, as indicated above. Student comments were also included on the form (Refer to Appendix A6 for the structured feedback form). After tabulating the results, the researcher hand delivered the structured feedback forms in a sealed envelope to each instructor in the E group during week 5. All E group instructors received their feedback within the first four working days of week 5. When hand-delivering the data to the E group instructors, the researcher explained how the structured feedback was collected and how the data were presented and analyzed. However, no assistance or extra support was provided to instructors in helping them further interpret what the results meant.

Simultaneously, the C group students also received questionnaire forms twice to complete during Block One—mid-block before the mid-term exams and at the end of the block, before the final exams. At these time points, the researcher and/or an assistant presented students in the PBL C group in Block One with the same questionnaire with close- and open-ended questions that the student participants in the E group had received. However, no student feedback was given either before, during, or after Block One to the C group PBL instructors. The intent was not to provide feedback to this group of instructors because the researcher wanted to measure if there were any differences between T_1 and T_2 evaluations for both groups to compare the results between the E group instructors (who had received timely feedback) with the C group instructors (who had not received timely feedback). Thus, for the study's purpose, only the E group PBL instructors received a one-time evaluation from T_1. After analyzing the data collected in this research, the researcher sent the E and C group instructors a debriefing form that explained the study purpose and the procedure that was used. Refer to Appendix A7 for the debriefing form.

Phase 2. After the data were collected for Phase 1, the researcher contacted all students via email or phone who had consented to being interviewed. The researcher arranged with each individual student the date, time, and place of the interview. Although the researcher also emailed the students the interview guide in advance of the interview, most indicated they had only read the guide 10 minutes prior to the interview starting. The duration of the students' interviews ranged from 14 minutes to 42 minutes, with an average interview taking approximately 35 minutes.

For instructors, the researcher asked Academic Affairs for the email addresses of the Block One PBL instructors. Then, the researcher sent all of the Block One PBL instructors an

email with a consent form asking if any of them would be interested in participating in an interview for this study. Thirteen out of a total of 22 PBL instructors replied that they were willing to participate, so the researcher contacted them to coordinate an interview date, time, and meeting place. Again, the interview guide was emailed to the instructors prior to the interviews being conducted. All instructors who consented were interviewed and saturation was reached by the 13th instructor. All instructors returned their signed consent forms at their interview. The duration of the instructors' interviews ranged from 27 minutes to 58 minutes, with an average time of approximately 40 minutes.

During the student and instructor interviews, the researcher used a voice recorder to record each interview, which was then transcribed verbatim. During the interviews, the interviewees were asked if they wished to review and correct the contents of the interview after it was transcribed. However, none of the participants showed any interest, and there was follow-up only when the researcher sought further clarification of their responses.

Privacy, Confidentiality, and Data Handling

The privacy of all participants for both phases of the study were protected by ensuring that all data were de-identified, password protected, and encrypted, and only the researcher had access to the recorded audiotapes and transcripts. All study data, including the questionaries and interview tapes, were kept in a safety deposit box at the researcher's personal office in Saudi Arabia at the College of Medicine in KSAU-HS's main campus in Riyadh. All data were encrypted and placed in a locked briefcase, which was continuously in the researcher's possession while traveling back to Calgary, Canada, where the rest of the data analysis was performed. Once back in Calgary, the data were kept in a locked filing cabinet at the researcher's personal office at his home in Calgary, with only the researcher possessing the keys to the safety

deposit box. As per the University of Calgary regulations, all study audiotapes, questionnaires, and transcribed material will be destroyed five years after the researcher's successful defence of this dissertation.

Data Analysis

Phase 1 Data Analysis

Statistical analyses were conducted using the Statistical Package for Social Sciences software SPSS, Version 21.0 (IBM Corp, Armonk, New York, USA). Descriptive statistics were performed for all the variables studied, along with inspections for missing data. Descriptive statistics for the survey items were summarized in text and reported in table form. A frequency analysis was performed to detect valid percentages for responses to all the questions from the questionnaire.

A one-way Analysis of Variance (ANOVA) was used to address the first research question, which was to determine if the students perceived any difference in the quality of teaching between instructors who received timely feedback during the study block versus those instructors who received no feedback from student evaluations. To determine the differences between E group and C group, a one-way ANOVA was conducted. To assess the reliability of the scores for the 12 questionnaire items on Part A (instructor's performance) and the 4 items on Part B (PBL session organization), Cronbach's alpha was computed. An aggregate subscale score was calculated by the mean score of items across Part A and Part B items. Then the mean score of the items was calculated and used in the ANOVA. The dependent variable was the difference in scores between student evaluations in T_1 and T_2, and the independent variable was

the feedback condition (i.e., E group where feedback was received versus C group where no feedback was received).

The researcher investigated further to determine if any differences in student evaluation appeared, based on gender or streams, about the quality of teaching between instructors who had received timely feedback versus those who received no feedback. To do this, a one-way ANOVA for the four categories (male, female, S1, and S2) was independently performed. For each category, the one-way ANOVA was used to determine the difference between the E and C groups based on the difference between the T_1 and T_2 questionnaire scores.

Participant responses on the three open-ended questions included in the quantitative questionnaire were analyzed using thematic content analysis. The process for the thematic content analysis was the same as described for the interview data analysis in the Phase 2 data analysis section. Each theme and sub-theme that resulted from the E and C groups data in T_1 and T_2 were calculated to determine the number of students who had commented on those themes/subthemes. These numbers and percentages of students were further broken down into the four categories (i.e., male, female, S1, and S2) as well.

Phase 2 Data Analysis

To address the second and third research questions, a thematic content analysis of the qualitative data from the instructor and student interviews was conducted. These questions sought to explore instructor perceptions about receiving suitable and applicable feedback on course evaluations to foster quality teaching and learning. Additionally, the questions sought to explore student perceptions about providing suitable and applicable feedback on course evaluations to foster quality teaching and learning. Thus, in reviewing the answers to these questions, it was important to identify common themes to facilitate data analysis. QSR

International's NVivo 11 Software for mac was employed to assist with the qualitative data analysis.

The researcher and three volunteer coders from the University of Calgary independently and concurrently coded and developed the sub-themes and themes. Once all transcripts were prepared for analysis, the researcher and the three volunteer coders independently explored the data by reading the transcripts and writing notes. Subsequently, they each labeled the text using codes that best conceptualized themes; combined similar codes together, named them, and interrelated themes; and created a description of each theme independently. For final verification, the results were discussed with the researcher's supervisors Drs. Tanya Beran and Elizabeth Oddone Paolucci, to ensure accuracy in the process. The researcher then chose quotes considered most illustrative of the resultant themes presented. A visual model is shown in Appendix A8, illustrating how the qualitative data were analyzed using Creswell's (2013) guideline.

Mixed Methods Approach to Data Mixing

To answer the fourth research question, the quantitative (Phase 1) and qualitative (Phase 2) results were merged to highlight the similarities and differences in each data set. The purpose of this approach was to determine the perceptions of PBL instructors and students about student feedback on instructional performance regarding whether it made a difference in instructor performance. Qualitative and quantitative results were compared using a side-by-side strategy (Creswell & Clark, 2011). First, the quantitative results were presented followed by the qualitative findings in the form of a narrative analysis, which included student and instructor quotes. These results are presented in Chapter four. Following this, the researcher provides an interpretation about how the qualitative quotes either confirmed or contradicted the quantitative results in Chapter five.

Rigour of Research Methods

Phase 1

The questionnaire used in the quantitative portion was tested for reliability and validity by Al-Eidan et al.'s (2016) study. Given that it demonstrated a high reliability score, the researchers concluded that it could be used with confidence with other medical students across different study blocks. In this study, the researcher measured the reliability of the questionnaire to see if it was consistent with the previous study's results.

 Phase 2

Qualitative analysis was possibly more subjective than the process commonly related to in the quantitative data analysis component, since a shared belief among social scientists is that a definite unbiased vision of social reality does not exist. Three different volunteer coders were recruited to code the interview transcript in parallel. The researcher also coded to verify the accuracy of the identified categories and themes, and to ensure the credibility and logistics of the information conveyed.

Rigour of Mixed Methods Analysis

To ensure the rigor of the current mixed methods design adopted, a number of issues were considered. First, the rationale for using a mixed methods methodology to answer the research questions had to be justified. The research questions required two data sets to be collected and analyzed in a single study to fully explore the issues that the researcher would be studying. In other words, it was recognized that collecting quantitative data or qualitative data alone would not be sufficient to answer the research questions. For this study, it was determined that adding qualitative data to quantitative data would provide more depth to understanding the

extent to which timely feedback was effective, from the point of view of both students and instructors. The researcher chose a side-by-side strategy to present the merged mixed data, which is considered the appropriate strategy for the mixed methods design used in this study. The philosophical approach of pragmatism also justified using a mixed methods approach, because in pragmatism both types of data are used concurrently for collecting and analyzing the data. In a pragmatic approach, the researcher also values both subjective and objective views to answer the research questions, and a quantitative and qualitative approach would be needed.

Reflexivity

Reflexivity in qualitative research acknowledges that there is a two-way, active relationship between researchers and their participants; thus, researchers must acknowledge and be aware that their own personal, cultural, social, educational, and political experiences may influence their objectivity and assumptions in their research (Orr & Bennett, 2009). This means, as Cunliffe (2003) acknowledged, that researchers must reflexively explore how they "constitute meaning through [their] own taken for granted suppositions, actions, and linguistic practices" (p. 989). Consequently, researchers should recognize their own position in the research context, and how their own preconceptions and values contribute to shaping knowledge in the data collection process (Berger, 2015; Finefter-Rosenbluh, 2017). With this insight, they can create strategies to minimize bias and ensure credibility of the data that are collected.

The study team included five members: the main researcher, his two supervisors, and two other experts in the field who were part of the supervisory committee. The main researcher was Abdulaziz Alhassan a PhD candidate who specialized in medical education and whose candidacy exam was concentrated in three areas: student feedback, faculty development, and mixed methods methodology. The supervisors for this research were Drs. Tanya Beran and Elizabeth

Oddone Paolucci. Dr. Beran is a PhD medical education researcher with extensive experience in medical education research and in education programs at the University of Calgary. Dr. Oddone Paolucci is a medical education researcher and Associate Professor in Community Health Sciences, with a joint appointment in the Department of Surgery in the Cumming School of Medicine at the University of Calgary. Her multi-disciplinary research background includes a focus on assessment and measurement, with a concentration on graduate student and resident education.

Members of the supervisory committee included Drs. Lubna Baig and Mohi Eldin Magzoub. Dr. Baig is a PhD medical education researcher with expertise in mixed methods research and the Pro-Vice Chancellor and Dean at the APPNA Institute of Public Health in Karachi, Pakistan. Dr. Magzoub is a PhD medical education researcher who has an extensive background in medical research and serves as a regional advisor with the World Health Organization.

The main researcher conducted the interviews with the students and the instructors at the COM in KSAU-HS. Since he is Saudi and had taken his undergraduate and master's degree in that country, he was familiar with its university system, learning environment, and culture. Thus, the researcher came to this research with his own pre-conceived bias and preconceptions about providing student feedback to instructors. Given this background, the researcher used the literature review as a guide for developing the semi-structured interview questions with students and instructors, rather than using his own experiences and opinions to guide the semi-structured interview questions.

The researcher was also aware that he must try to minimize any potential concerns that the participants might have concerning the confidentiality of the information from their

participation. As such, he took steps to minimize the possibility of provoking fear and disturbing the confidentiality of study participants. Consequently, the researcher explained verbally to the participants and through the consent form the nature of the study, the study's objectives, the participants' potential role and how their data would be used, and that their confidentiality would indeed be protected. The researcher also ensured that the participants knew that his research was not being conducted under the auspices of KSAU-HS, but that the research would benefit the body of knowledge about student feedback in general, and in Saudi Arabia universities in particular, including at KSAU-HS. The researcher was also mindful that participants should be comfortable throughout the interview process; as such, all of the interviews were done face-to-face at a convenient place for the participants and at their preferred time.

On the other hand, being an insider can also present some valuable insights into the data collection process. Specifically, researchers have indicated that when the researcher is an insider to the culture of the study place and participants, they can come from a strong position because they are familiar with the institution and the culture (Finefter-Rosenbluh, 2017). In this case, the researcher was familiar with both the English and Arabic language and how people express themselves in Saudi Arabia. This meant that, although the interviews were conducted in English, English is considered to be a second language in Saudi Arabia and there are certain idiomatic expressions that are commonly expressed that are familiar to native speakers in Arabic. Consequently, because the researcher had this insider knowledge, he was able to have fruitful interviews with participants wherein he was able to seek clarification on anything the participants were explaining.

When analyzing the interviews, insider and outsider perspectives were also important to consider. The researcher analyzed the interview transcripts and developed codes that created

sub-themes and main themes. At the same time, the researcher employed the services of three

volunteer coders from the University of Calgary to analyze the interview transcripts and to

develop codes that created sub-themes and main themes. By employing coders from outside

Saudi Arabia, the researcher was able to limit enacting his own biases and perceptions of how to

code the data and of the themes and sub-themes that were developed. The researcher then

discussed with his supervisors the themes that he and the other volunteer coders had developed.

As the supervisors reviewed the steps of the analysis, and the created sub-themes and themes,

their views as "outsiders," together with the three volunteer coders, balanced the researcher's

"insider" perspective.

Ethics Approval

This study was reviewed and approved by University of Calgary's Conjoint Health

Research Ethics Board (CHREB) with stud ID number REB15-1782.

Chapter Four: Results

This chapter presents the results of this study as they relate to each of the four research questions. The first question sought to determine if students had perceived any difference in the quality of teaching between PBL instructors who had received timely student feedback during the study block compared to PBL instructors who had received no feedback from student evaluations during the study block. The second and third research questions explored PBL instructor perceptions about receiving suitable and applicable feedback on course evaluations to foster quality teaching and learning. Additionally, these questions explored student perceptions about providing feedback for the purpose of improving teaching and learning. The last research question addressed the PBL instructors' and students' perceptions about student feedback on instructional performance in regards to making a difference in instructor performance.

Quantitative Results

Descriptive Statistics about Students

A total of 329 first-year medical students, who were registered at KSAU-HS in Riyadh, Saudi Arabia in 2016, received an invitation to participate in the study. The total number of students who completed the questionnaire at T_1 was 305 (92.7%), and at T_2 was 307 (93.3%). A total of 283 (86%) participants provided complete data for both the T_1 and T_2 questionnaires. Demographic information about all participating students is found in Table 4.

Table 4

Students' Demographic Information

Category	EG (T_1)		EG (T_2)		CG (T_1)		CG (T_2)		T_1 (EG+CG)		T_2 (EG+CG)	
	N	(%)	*N*	(%)	*N*	(%)	*N*	(%)	*N*	(%)	*N*	(%)
All Students	151	(45.9)	153	(46.5)	154	(46.8)	154	(46.8)	305	(92.7)	307	(93.3)
Male Students	103	(31.3)	106	(32.2)	106	(32.2)	109	(33.1)	209	(63.5)	215	(65.3)
Female Students	48	(14.6)	47	(14.3)	48	(14.6)	45	(13.7)	96	(29.2)	92	(28)
S1 Students	122	(37.1)	127	(38.6)	135	(41)	135	(41)	257	(78.1)	262	(79.6)
S2 Students	29	(8.8)	26	(7.9)	19	(5.8)	19	(5.8)	48	(14.6)	45	(13.7)

Note. *N* = number of students, EG= Experimental Group, CG= Control Group.

Of students who participated in completing both T_1 and T_2 questionnaires, 59.6% ($n = 196$) were male and 26.4% ($n = 87$) were female. Most were in the first stream (S1, $n = 242$, 73.5%) and the remaining ($n = 41$, 12.5%) were from S2.

Students' Response Rate per Class

Table 5 shows response rates in each class for both the E and C groups at T_1 and T_2. For the female classes, the highest number of students participating per class was 13 responses and the lowest was 9 responses, whereas the highest number for male classes per class was 8 responses and the lowest was 5 responses. In chapter three, Table 1 presents the breakdown of students per instructor and class.

Table 5

Student Responses per Class

Class Experimental /Control	Number of Classes	Gender	Class Streams	Number of Student responses		
				T1	T2	T1 & T2
E Class	1	Male	Stream 1	8	8	7
	2	Male	Stream 1	7	7	7
	3	Male	Stream 1	8	6	6
	4	Male	Stream 1	5	8	5
	5	Male	Stream 1	8	8	8
	6	Male	Stream 1	7	8	7
	7	Male	Stream 1	8	8	8
	8	Male	Stream 1	7	8	6
	9	Male	Stream 1	8	8	8
	10	Male	Stream 1	6	8	6
	11	Male	Stream 1	7	8	7
	12	Male	Stream 1	7	5	5
	13	Male	Stream 2	8	8	7
	14	Male	Stream 2	9	8	7
	15	Female	Stream 1	10	12	10
	16	Female	Stream 1	13	12	12
	17	Female	Stream 1	13	13	13
	18	Female	Stream 2	12	10	9
C Class	19	Male	Stream 1	7	8	7
	20	Male	Stream 1	8	8	8
	21	Male	Stream 1	8	8	8
	22	Male	Stream 1	8	7	7
	23	Male	Stream 1	7	8	7
	24	Male	Stream 1	8	7	7
	25	Male	Stream 1	8	8	7
	26	Male	Stream 1	7	8	7
	27	Male	Stream 1	8	8	8
	28	Male	Stream 1	8	8	8
	29	Male	Stream 1	7	7	7
	30	Male	Stream 1	8	8	8
	31	Male	Stream 1	7	8	6
	32	Male	Stream 2	7	8	7
	33	Female	Stream 1	11	12	11
	34	Female	Stream 1	12	12	11
	35	Female	Stream 1	13	10	10
	36	Female	Stream 2	12	11	11

Summary of Questionnaire Items

The evaluation scores provided by students in the E and C groups are shown in Table 6. It shows the mean for each of the 14 items in Part A, a measure of the instructors' performance, along with the total mean for the combined 14 items. The table also shows the mean for each of the six items in Part B that measures organization of PBL sessions, the total mean for the combined six items, and the total mean for all 20 items in Part A and B combined. Also, this table includes the mean differences in student ratings between T_1 and T_2 for instructor performance and PBL organization. Moreover, the scores for gender and each stream are noted in Appendices B1, B2, B3, and B4. Specifically, Appendix B1 lists the results for the male students' experimental (E_M) and control (C_M) groups, Appendix B2 lists the female students' experimental (E_F) and control (C_F) group results, Appendix B3 outlines the results for the S1 experimental (E_{S1}) and S1 control (C_{S1}) group students, and Appendix B4 outlines the results for the S2 experimental (E_{S2}) and S2 control (C_{S2}) group students.

Table 6

Mean Ratings of all Students in E and C Groups at T1 and T2

A. Instructor's Performance	E (T$_1$)			E (T$_2$)			C (T$_1$)			C (T$_2$)			Diff T$_2$-T$_1$	
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	E	C
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	151	4.13	1.01	153	4.42	0.82	151	4.26	0.93	154	4.47	0.76	0.29	0.21
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	151	4.30	0.95	153	4.54	0.79	152	4.38	0.93	154	4.45	0.86	0.24	0.07
3. Cooperation with students: Instructor provided support and guidance to me when needed.	151	4.47	0.79	153	4.71	0.69	153	4.53	0.80	154	4.58	0.72	0.24	0.05
4. The instructor was able to effectively deliver the content.	151	4.38	0.93	152	4.66	0.71	153	4.47	0.74	154	4.56	0.74	0.28	0.09
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	151	4.27	0.93	153	4.54	0.80	154	4.24	0.99	154	4.42	0.90	0.27	0.18
6. The instructor gave students opportunities to interact with him/her.	151	4.42	0.93	151	4.66	0.77	153	4.61	0.69	154	4.71	0.52	0.24	0.10
7. The instructor provided me with feedback.	148	4.07	1.10	151	4.46	0.87	154	4.18	1.05	154	4.32	0.93	0.39	0.14
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	150	3.95	1.13	152	4.38	0.96	154	4.01	1.08	153	4.18	1.05	0.43	0.17
9. The instructor appropriately facilitated the brainstorming sessions.	150	4.28	0.83	152	4.61	0.61	154	4.39	0.86	154	4.49	0.72	0.33	0.10
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	151	4.23	0.91	153	4.59	0.67	153	4.33	0.85	154	4.54	0.65	0.36	0.21
11. The instructor appropriately facilitated the reporting sessions.	150	4.19	0.92	153	4.55	0.68	152	4.34	0.81	153	4.41	0.83	0.36	0.07
12. The instructor effectively handled time management.	149	4.48	0.75	152	4.66	0.76	153	4.33	0.88	154	4.37	0.88	0.18	0.04
13. The instructor helped to keep the group focused on its task.	151	4.48	0.81	152	4.68	0.61	154	4.47	0.78	154	4.51	0.76	0.20	0.04
14. The instructor provided well balanced intervention.	150	4.27	0.95	153	4.58	0.77	154	4.37	0.85	154	4.50	0.78	0.31	0.13
A. From A1 to A14	151	4.28	0.65	153	4.57	0.53	154	4.35	0.60	154	4.47	0.56	0.29	0.12
B. PBL Session Organization														
1. The PBL objectives were always clear.	151	3.85	1.11	153	4.27	0.94	154	3.83	1.05	154	3.77	1.06	0.42	-0.06
2. The content of the PBL sessions met the objectives.	151	4.07	1.02	153	4.42	0.82	154	4.18	0.86	154	4.18	0.90	0.35	0.00
3. The content of the PBL sessions met my learning needs.	151	3.98	1.11	153	4.22	1.03	154	3.90	1.14	154	3.92	1.10	0.24	0.02
4. The PBL sessions were lead in a clear manner.	151	4.20	0.92	153	4.45	0.83	154	4.17	0.96	154	4.17	0.94	0.25	0.00
5. The block learning materials met my learning needs.	150	3.63	1.11	153	3.92	1.23	154	3.58	1.14	153	3.63	1.13	0.29	0.05
6. The PBL sessions stayed on the assigned schedule.	150	4.43	0.93	153	4.58	0.83	154	4.43	0.77	153	4.48	0.73	0.15	0.05
B. From B1 to B6	151	4.03	0.75	153	4.31	0.75	154	4.01	0.74	154	4.02	0.74	0.28	0.01
A and B. From A1 to B6	151	4.20	0.61	153	4.49	0.51	154	4.25	0.56	154	4.33	0.55	0.29	0.08

Note. Diff= Difference in the mean between T$_2$ and T$_1$

Measures

The questionnaire used in this study consisted of 20 items measuring instructors' performance and PBL session organization. However, following a PCA, a total of four items were subsequently removed (items A7, A8, B4 and B6). Specifically, items A7 and A8 in the instructor's performance section from Part A of the questionnaire were excluded for two reasons. The first reason was due to the item having a split loading, while the second was because conceptually, unlike the other items, these two items were measuring instructor efforts towards *individual* student performance versus the collective. Similarly, items B4 and B6 in the PBL session organization from Part B of the questionnaire were excluded from the analysis for two reasons. The first reason is because these prior to deleting items A7 and A8 from the analysis, B4 and B6 loaded highly on two factors. Second, although all items in Part B were meant to measure only PBL session mechanics, B4 seemed to be also measuring an instructor's performance and B6 the general mechanics of the entire course. Thus, the following sections present the PCA for the 16 final questionnaire items.

PCA of items (A1 to B5) excluding (A7, A8, B4, and B6). A PCA was conducted on the remaining 16 items with orthogonal rotation (varimax). The Kaiser-Meyer Olkin (KMO) and Bartlett's test measure of sampling adequacy were used to examine the appropriateness of PCA. The chi-square (χ2) approximation was 2358.46, with 120 degrees of freedom. The KMO statistic of 0.92, $p < .05$, falls in the range of superb as it is greater than the convention of 0.90 (Hutcheson & Sofroniou, 1999), indicating that a PCA is appropriate for further analysis. Additionally, it was observed that all items correlated at least 0.3 with at least one other item, which suggests reasonable factorability. For details refer to Appendix B5. A total of two factors were found to explain 56.03% of the variance, each with an Eigenvalue of greater than 1. Factor

1 accounts for 44%, while Factor 2 accounts for 12% of the variance. As shown in Table 7, the

items with the highest loadings are shown for each factor.

Table 7

Rotated Component Matrix and Communalities

	Instructor's performance	PBL session organization
A1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	**.54***	.03
A2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	**.76***	.16
A3. Cooperation with students: Instructor provided support and guidance to me when needed.	**.68***	.26
A4. The instructor was able to effectively deliver the content.	**.78***	.14
A5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	**.71***	.13
A6. The instructor gave students opportunities to interact with him/her.	**.61***	.09
A9. The instructor appropriately facilitated the brainstorming sessions.	**.74***	.21
A10. The instructor appropriately facilitated the hypothesis reorganization sessions.	**.77***	.24
A11. The instructor appropriately facilitated the reporting sessions.	**.74***	.23
A12. The instructor effectively handled time management.	**.60***	.20
A13. The instructor helped to keep the group focused on its task.	**.72***	.14
A14. The instructor provided well balanced intervention.	**.77***	.21
B1. The PBL objectives were always clear.	.21	**.78***
B2. The content of the PBL sessions met the objectives.	.18	**.81***
B3. The content of the PBL sessions met my learning needs.	.15	**.80***
B5. The block learning materials met my learning needs.	.16	**.76***

Reliability. To determine the overall consistency of the 16 items in the questionnaire, a Cronbach's alpha was computed to be 0.91. This result indicates an excellent level of internal consistency. The reliability for the 12 items loading under Instructor Performance was 0.92 and for the four items loading under PBL session organization was 0.82. In general, both factors showed highly reliable Cronbach's alpha scores.

Effect of Timely Student Feedback

Using data from participants who completed questionnaires at both time points, one-way ANOVAs were used to determine if the E groups had greater change scores compared to the C groups. The three ANOVAs were performed on Part A (instructor's performance) items, Part B (PBL session organization) items, and all items together. There was no statistically significant difference in the instructor's change in performance between the E and C groups, $F(1, 281) = 3.36, p > .05$. However, there was a statistically significant difference in the PBL session organization change scores between the E and C groups, $F(1, 281) = 11.26, p = .001$, partial eta squared $= 0.04$, as well as in all questionnaire items change scores between the E and C groups, $F(1, 281) = 7.05, p < .01$, partial eta squared $= 0.02$. Table 8 shows the E and C group means and the variabilities of the difference in the questionnaire scores between T_1 and T_2 for instructor's performance, PBL session organization, and all items overall.

Table 8

Mean Change Scores of E and C groups for all students evaluation

		N	M	SD
Instructor's performance (12 items)	E group	138	0.26	0.65
	C group	145	0.12	0.65
PBL session organization (4 items)	E group	138	0.35	0.91
	C group	145	-0.001	0.87
(All 16 items)	E group	138	0.29	0.62
	C group	145	0.09	0.61

Effect of Timely Student Feedback by Gender and Stream

Three ANOVAs were conducted to determine if there were any significant change scores for instructor's performance items, PBL session organization items, and all questionnaire items based on gender and stream. For men, three significant differences emerged. The group with feedback obtained higher performance change scores than the group that did not, $F(1, 194) = 4.87, p < .05$, partial eta squared $= 0.02$. The group with feedback also acquired higher PBL session organization change scores than the group that did not, $F(1, 194) = 9.67, p < .01$, partial eta squared $= 0.05$, as well as higher change scores on all questionnaire items compared to the group that did not, $F(1, 194) = 8.21, p < .01$, partial eta squared $= 0.04$. For women, no significant differences emerged. There was no difference in the instructor's performance change scores between the E_F and C_F groups, $F(1, 85) = .002, p > .05$, PBL session organization change scores, $F(1, 85) = 2.00, p > .05$, or total questionnaire items change scores, $F(1, 85) = .31, p > .05$. Table 9 shows the E and C groups means and the variabilities of the difference in the questionnaire scores between T_1 and T_2 for instructor's performance, PBL session organization, and the overall questionnaire items for the male and female groups.

Table 9

Mean Change Scores of E and C groups by gender

		Male group			Female group		
		N	*M*	*SD*	*N*	*M*	*SD*
Instructor's performance (12 items)	E Group	94	0.33	0.67	44	0.12	0.58
	C Group	102	0.12	0.63	43	0.12	0.70
PBL session organization (4 items)	E Group	94	0.40	0.93	44	0.25	0.85
	C Group	102	0.01	0.85	43	-0.02	0.95
(All 16 items)	E Group	94	0.35	0.64	44	0.16	0.55
	C Group	102	0.10	0.59	43	0.08	0.68

Conducting the same ANOVAs as above, but with the S1 students, three significant differences emerged. The group with feedback obtained higher performance change scores than the group that did not, $F(1, 240) = 4.99$, $p < .05$, partial eta squared $= 0.02$. The group with feedback also gained higher PBL change scores than the group that did not, $F(1, 240) = 8.36$, $p < .01$, partial eta squared $= 0.03$. Finally, the group with feedback also obtained higher change scores in all questionnaire items compared to the group that did not, $F(1, 240) = 7.74$, $p < .01$, partial eta squared $= 0.03$.

For S2 students, no significant differences emerged. There was no statistically significant difference in the instructor's performance change scores between the E_{S2} and C_{S2} groups, $F(1, 39) = 0.11$, $p > .05$. Similarly, there was no statistically significant difference in the PBL session organization change scores between the E_{S2} and C_{S2} groups, $F(1, 39) = 2.50$, $p > .05$, or in all questionnaire items change scores between the E_{S2} and C_{S2} groups, $F(1, 39) = 0.10$, $p > .05$. Table 10 shows the E and C groups means and the variabilities of the difference in the questionnaire scores between T_1 and T_2 for instructor's performance, PBL session organization, and the overall questionnaire items for the S1 and S2 groups.

Table 10

Mean Change Scores of E and C groups by Streams

		S1 group			S2 group		
		N	*M*	*SD*	*N*	*M*	*SD*
Instructor's performance (12 items)	E group	115	0.29	0.63	23	0.13	0.75
	C group	127	0.11	0.63	18	0.21	0.79
PBL session organization (4 items)	E group	115	0.32	0.92	23	0.53	0.83
	C group	127	-0.003	0.81	18	0.01	1.26
(All 16 items)	E group	115	0.30	0.60	23	0.23	0.69
	C group	127	0.08	0.60	18	0.16	0.74

In summary, the quantitative results indicate no significant change in instructor performance between the E and C groups. However, there was a significant change in ratings of PBL session organization and total change scores. The results also showed that evaluations of male and S1 instructors' performance improved significantly for the feedback group, but not the C group and for evaluations of instructors' PBL session organization, as well as for all questionnaire items change scores. Moreover, the data suggested no significant change in female and S2 student evaluations.

Results of the Open-Ended Items of the Questionnaire

The questionnaire also included the following three open-ended questions to capture additional comments that students wished to make about their instructors' performance and the organization of the PBL sessions: 1) What do you like most about your instructor's performance; 2) What would you like to see changed in the organization and content of the PBL sessions for future classes?; and 3) Provide any additional comments you may wish to. Refer to Appendix A2 for the questionnaire form.

Each response to these questions was reviewed for common themes. Specifically, using content analysis methods, themes referencing distinct ideas were tagged by code names. These codes were not preconceived, but rather arose from student responses. The codes were analyzed for a second time to determine convergence by theme and subject matter, which resulted in the development of four broader themes and 13 sub-themes. Following this, the frequency of student responses for each theme and sub-theme were calculated.

The analysis of the written responses produced a total of 1,382 discrete observations across the data set for the three open-ended questions in the T_1 and T_2 questionnaires. For the first question regarding instructor performance, written responses represented 68% (n=940) of the total responses. Two themes emerged from the first question: the first theme was *general comments* while the second theme was *specific instructor performance*. For the second question asking students about changes they would like to see in either the organization of the PBL sessions or in the content of future classes, the written responses represented 30% (n=418) of the total responses. Two themes emerged from these responses: the first was *course organization* and the second was *instructor's related tasks*. Written responses to the third question represented 2% (n=21) of the total responses and these results were found to fit with the themes that had emerged from the first and the second open-ended questions. In the following section, the themes and sub-themes that emerged from the three open-ended questions are further explained.

Theme one—general comments. In this first theme, the total responses were 22% (n=302) from all student questionnaires. The analysis of the student responses resulted in identifying two sub-themes: 1) the instructor's personality—here, students commented about their instructors' personalities (e.g., patient, nice attitude, friendly, optimistic with nice smile, well-spoken, strict, good attitude, good manners, etc.); and 2) the instructor's overall

performance—in this subtheme, students made a variety of comments about the performance of their instructors (e.g., was helpful, enthusiastic, focused, a good instructor; offered guidance; etc.).

Theme two—instructors' specific performance. In theme two, the total responses were 47% (n=648) from all student questionnaires. Six sub-themes emerged from students: 1) feedback to students—this theme referred to how students viewed the feedback they received from their instructors (e.g., feedback is positive, valued, constructive, regular, etc.); 2) communication with students—for this sub-theme, students reflected on the way in which their instructors communicated and interacted with them (e.g., listens to us, is open to suggestions, is easy to communicate with, etc.); 3) how instructors manage students—this sub-theme reflected student comments about how their instructors managed students during the PBL sessions (e.g., gives us time for discussion, only interferes when needed, guides us on the right path, allows and encourages interaction); 4) instructors' time management skills—this sub-theme identified how instructors managed the PBL sessions (e.g., managed time well, always on time, punctual, etc.); 5) instructors' good teaching skills—here, students remarked on their instructors' teaching abilities (e.g., the instructor stimulated students' thinking, the instructor always tried to clarify, the instructor taught additional things that were helpful to the case, etc.); and 6) instructors' professional experiences—in this subtheme, students pointed out how the professional experiences of their instructors contributed to their instructors' performance (i.e., expert in his/her craft, knowledgeable, shares previous experience, gives important clinical information gathered from experience).

Theme three—course organization. From this theme, the total responses were 22% (n=303) from all student questionnaires. Three sub-themes emerged: 1) improving schedules,

wherein students commented about how to improve the timing for PBL sessions (e.g., increasing the time allotted to PBL sessions, reducing the number of sessions per week, not holding PBL sessions immediately after lectures, etc.); 2) improving logistics, in which students commented about some aspects of logistics that could improve the course organization (e.g., putting information on Blackboard, conducting smaller classes with fewer students, resolving computer issues, discussing subjects more suited to students' knowledge level, etc.); and 3) improving PBL cases—here, student responses indicated the importance of using case studies that are appropriate for the level of the learners, that is, not too easy nor too advanced (e.g., content was above our level, content should follow the lecture, PBL sessions should relate more to the block content, etc.).

Theme four—instructor's related tasks. From this theme, the total responses were 9% (n=129) from all student questionnaires. Two sub-themes emerged from this theme: 1) improving the instructor's role. In this sub-theme, students provided comments about how to improve the instructors' role to enhance students' learning (e.g., I would like the instructor to [take the following actions]: give me a chance to reply to his comments, provide us with appropriate sources each week, recommend sources for us to search, etc.); and 2) providing feedback—for this sub-theme, students observed how their instructors' feedback could improve PBL sessions (e.g., he needs to give more feedback, he gives me feedback on my performance, evaluating students should include both positive and negative [feedback]).

Table 11 shows the results of the frequency and percentage of student responses for each theme for all categories. The percentage for each theme is based on the total responses for each category independently. A more complete breakdown of the results of the frequency of student responses for each theme and sub-theme for both E and C groups between T_1 and T_2 is presented

in Appendix B6. Moreover, the results by gender and for each stream are shown in Appendices,

B7, B8, B9, and B10. Specifically, Appendix B7 lists the results for the male students of the E_M

and C_M groups, Appendix B8 presents the results for the female students from the E_F and C_F

groups, Appendix B9 outlines the results for S1 in the E_{S1} and C_{S1} groups, and Appendix B10

displays the results for S2 in the E_{S2} and C_{S2} groups. As shown in the table, more comments were

received about instructors' performance compared to course organization, for all students, as

well as for male/female students and both streams. However, the female students' comments

about their instructors' performance were closer in number to their general comments, compared

to male students.

Table 11

Students Responses for Each Theme from the Three Open-Ended Items

Themes	All Students *f (%)*	Male students *f (%)*	Female students *f (%)*	S1 Students *f (%)*	S2 Students *f (%)*
General comments	302 (22%)	142 (16%)	162 (34%)	262 (21%)	43 (29%)
Instructors' specific performance	648 (47%)	476 (53%)	168 (35%)	595 (48%)	52 (34%)
Course organization (Improving)	303 (22%)	209 (23%)	97 (20%)	263 (22%)	40 (26%)
Instructor's related tasks	129 (9%)	72 (8%)	56 (11%)	111 (9%)	16 (11%)
Total responses	1382 (100%)	899 (100%)	483 (100%)	1231 (100%)	151 (100%)

f: Frequency of student responses for each theme

Qualitative Results

After the Phase 1 data were collected, the researcher conducted Phase 2 of the study from

November 21, 2016 to December 31, 2016. First, the Phase 2 results for the instructors who

delivered the PBL sessions in the Foundation Block are presented, followed by the results for the

first-year medical students. The qualitative data respond to two secondary research questions:

- What are PBL instructor perceptions about receiving suitable and applicable

  feedback on course evaluations to foster quality teaching and learning?

- What are student perceptions about providing suitable and applicable feedback on

  course evaluations to foster quality teaching and learning?

Based on the results from the interviews with students and instructors, three major

overarching themes emerged concerning student feedback: 1) the *importance* of student

feedback; 2) the *process* of student feedback; and 3) the *use* of student feedback. From each of

these major themes for instructors and students, slightly different sub-themes emerged for

students compared to instructors, but all sub-themes for both groups were related to the major

themes.

Instructor Interview Responses

This section will begin by analyzing the results from conducting one-on-one interviews

with 13 instructors (both male and female) out of a potential of 22 PBL instructors at the COM in

KSAU-HS instructors in Riyadh, Saudi, Arabia: six instructors were from the C group and seven

were from the E group (Appendix B11). In analyzing the results, instructors' responses were

grouped by sub-themes, which are presented in this chapter. The instructors' demographic

characteristics, (i.e., education, background, experience in using PBL as a teaching model) will

be presented first, followed by the themes and sub-themes that emerged from the instructor

interviews.

Education and background of the PBL instructors. From September to June, most

instructors deliver PBL sessions in various block studies during the academic year. Of the 13

instructors, five (38%) were physicians, five (38%) had a medical sciences background, and three (23%) had a Doctor of Philosophy (PhD) degree (e.g., neuroscience, epidemiology). All of the instructors had a background in other teaching methods, such as lecture-based and PBL methods.

Years of experience using PBL as a teaching method. Out of 13 instructors, eight (61%) had more than five years of experience using PBL sessions as a teaching method, while three (23%) instructors had less than five years. Within this group of instructors, six (46%) had been exposed to PBL sessions as students, and, thus, reported some familiarity with the method before becoming an instructor.

Themes. In the following section, the themes and sub-themes that emerged from the instructor interviews are presented. These themes and sub-themes emerged from the interview guide that the researcher used (see Appendix A3 for the interview guide).

Theme one: The importance of student feedback. This first major theme emerged from a question in the "Interview Guide for the Instructors' E Group," and from two questions that the C group instructors were asked from their interview guide (i.e., "Interview Guide for the Instructors' C Group). These questions are outlined in Table 12:

Table 12

Theme one: Interview Questions for Instructors

C Group	E Group
• To what extent do you feel students' feedback is valuable in enhancing teaching performance? • How would you characterize the strengths and weaknesses of receiving student feedback in a timely manner?	• Describe the benefits you received as a result of receiving timely feedback?

In this first major theme, instructors indicated that student feedback was important in improving their performance, delivering high quality teaching, and in addressing student needs. Two sub-themes emerged from this theme: a) instructors view student feedback as an important tool in the instructors' professional development as educators; and b) instructors view student feedback as essential in meeting student learning needs. Each of these two sub-themes is discussed below.

First sub-theme: Instructors view student feedback as an important tool in the instructors' professional development as educators. In this first sub-theme, instructors pointed out the importance of receiving feedback from students, not only to identify areas for teaching improvements, but also so they could be reminded of what students thought they were doing well.

"The feedback I received was a positive reinforcement. Looking at these students' feedback helped me in saying that there are many things that I was doing well. I was able to focus on them all and try to improve in giving my feedback to students as well, especially those on the weaker side" (11-6).

"When you don't have feedback, you don't know if you're doing things right or wrong. Maybe, you are thinking you are doing it right. But, from the students' perspectives, it is not" (11-1).

Second sub-theme: Instructors view student feedback as essential in meeting student learning needs. In this second sub-theme, most instructors made analogies comparing students to customers who have needs that the instructor is required to meet. This learner-centered approach is reflected in comments such as:

"From my point, since they are the customers, they should [give] feedback because then if I have a problem, I cannot improve . . . [for example] if I don't succeed in delivering my session in a way that its beneficial for them, then there is no use for them to come in for these two hours of their lives" (11-1).

Instructors also realized that since they have different styles of teaching and subjects to teach, they also have diverse ways of communicating with students. Consequently, students may not always understand what instructors are trying to communicate, and, thus, student feedback is important to helping instructors understand student needs.

"If students do not understand what we are saying and [do not have the context to understand] and they don't feel it's important for them, without that feedback we are just giving lectures fixed to the curriculum; it's not going to be beneficial to the students. They are not going to use or apply it that much" (11-6).

Theme two: The process of student feedback. This second major theme emerged from answers to nine questions that were asked in the "Interview Guide for the Instructors' E Group," and from five questions asked in the "Interview Guide for the Instructors' C Group." These questions are outlined in Table 13.

Table 13

Theme two: Interview Questions for Instructors

C Group	E Group
• Do you think if you had received feedback in a timely manner from students, you would have been able to adapt and change? If yes how? • To what extent do you think receiving student feedback in a timely manner is important?	• What do you suggest as an effective method for delivering feedback? • What environmental or organizational settings, or other factors would you feel enabled or hindered feedback implementation? • What advice would you have for

• What perspectives and experiences do you think should be brought to the feedback process and implementation? • What advice do you have for organizations implementing student feedback in a timely manner? • How would you characterize the strengths and weaknesses of receiving student feedback in a timely manner?	organizations implementing feedback from students in a timely manner? • Describe the benefits you received as a result of receiving timely feedback? • When is students' feedback valuable and easy to implement in comparison to your students' feedback in this study? • Explain the contribution of student feedback to faculty development. • To what extent did the content of the feedback items cover all your interests and requirements about students' feedback? • To what extent you think feedback delivered in a timely manner from students is important? • How would you characterize the strengths and weaknesses of receiving feedback in a timely manner by students?

In this second major theme, instructors indicated that the student feedback process must be planned and deliberate for instructors to receive the maximum benefit from it. Six sub-themes emerged from this theme: a) ensuring timely feedback; b) collecting student feedback; c) enhancing the presentation of student feedback for instructors; d) supporting instructors in understanding student feedback; e) assisting instructors in incorporating student feedback; and f) exposing students to the utility of feedback. Each of these sub-themes is discussed below.

First sub-theme: Ensuring timely feedback. Some instructors indicated that for feedback to be maximized and to benefit students, instructors need to receive feedback in a timely manner that allows them to make immediate changes.

"[Receiving student feedback] in a timely manner [is an important part of the process] because we have to adjust and we have to make some changes if it is required during the block and after the block" (21-3).

These instructors emphasized that students will receive the most benefit when the student who provided the feedback sees the results from his or her feedback. Thus, timely feedback will help instructors make adjustments that the students who provided the feedback will see and directly benefit from. For instance,

"Feedback from the student is very important, and [receiving it] in a timely manner is also important because if they have some problem, we can solve it during the course [for the same student]" (21-3).

Some instructors also pointed out that feedback should be received in a timely manner because if they receive feedback too late, they might have challenges in determining the context surrounding what the student was referring to.

"I think it is a challenge when you get [student feedback] late, because you tend to forget what you did exactly. Whereas [if I receive it] in a timely manner, it will give me a better chance to reflect objectively on something that recently happened" (12-4).

Equally important, a few instructors pointed out receiving timely feedback was important because students can also forget what they wanted to communicate about an instructor if feedback is requested too late.

"[Students] might forget important things if providing evaluation at the end of the
block" (21-6).

Second sub-theme: Collecting student feedback. One instructor commented that
asking students to give direct, verbal feedback to an instructor might not provide the useful
information an instructor needs**.**

"[Student feedback] should be written. I'm very much sure that it won't be useful for
[students] to be asked for verbal feedback unless it is given to someone else and not to
the tutor" (11-5).

A few instructors also pointed to the importance of universities implementing online
evaluations that allow students to provide feedback from any location, thereby ensuring student
confidentiality.

"We could talk about the use of electronic resources. The feedback process through
computers should be not only from inside the campus; it should be from everywhere. I
mean students can go at home and do the process, whenever he wants to do that" (21-2).

"[The university needs to provide] electronic feedback for the students. It's easy. The
student can do it on the mobile after the session or within the session or after discussions.
And this feedback nobody can see because the students are really shy to do the feedback"
(21-1).

Most instructors emphasized that the quality of student feedback can be compromised if
students are rushed into giving their feedback. They also stated that students should not be forced
to give feedback; the process should be optional and students should be afforded time to think
and reflect about the feedback they want to share.

"You need to give students the time and be honest, to be like fair . . . give him just

enough time to judge, to give his opinion. Not to force him directly to just do this and

give me your feedback immediately. Students need time. I mean like to think about the

course [so they can] reflect their feedback properly on the whole process" (21-2).

Another instructor indicated that the questions students are asked in evaluations must be

related to specific instructional performance. Moreover, the questions posed should assess all

educational opportunities and interactions with the, both inside and outside the classroom.

"I think that feedback should be implemented not only for PBL. It should be for lectures,

for practical, even for your office hours. Okay, this is a way for improvement, and

internationally, this is a way of assessing your performance" (11-1).

"If you had a very specific question on 'What do you think about his slides?'; 'What

do you think about the length of the slides?'; 'What do you think about his time

management?'; 'What do you think about body language while giving the lecture?,

then you would have more professional and objective feedback that would help you"

(21-6).

Third sub-theme: Enhancing the presentation of student feedback for instructors. A few

instructors indicated that receiving feedback that included statistical results and visual

information such as diagrams, in addition textual information, would be helpful.

"It can be also in the form of an e-mail with a visual diagram with a good presentation.

But for me . . . written feedback with percentages written is good enough" (11-6).

"Probably better to have [student feedback results] in a format of average and median for

different questions that students are asked "(12-4).

Fourth sub-theme: Supporting instructors in understanding student feedback. A few instructors commented that they might be challenged to understand, accommodate, or know how to deal with negative feedback. Receiving such negative feedback may also impact the way instructors would subsequently interact with the same group of students. For instance,

"If the feedback is bad, and you are given the feedback and you still have those students in your class, it might affect you. But we have to think positively and face the reality" (11-5).

"If I'm a poor facilitator and if I get a lot of negative comments, would that affect my behavior towards the students or not?" (11-6).

On the other hand, an instructor commented that receiving negative feedback is a normal part of life in academia and instructors should not take it personally, but rather deal with the feedback in a professional and non-emotional way.

"Since you are in the academic field, these are the things you need to be oriented about, that there is nothing personal about feedback in academia, but take it in a professional way. You need to be serious professionally, keep your emotions away, and as long as this student is practicing ethical comments, then he has the right to express his feedback to you" (11-1).

Most instructors acknowledged that a specialized third party consultant could potentially help them navigate some of the complexities that might arise from student feedback. Having this objective third person may assist the instructor in determining where the requested changes should be focused.

"Provide specialist people so that the instructors could get back to them in case he needs it or if he receives some contradicting feedback" (21-4).

". . . Someone else to sit with you to talk about the results - that would help a lot. That would even open your mind; you might not see the point still because you were not that much aware of this thing happening. So, you need someone else to point out the exact point and describe what's really happening behind this point instead of just having the paper, which might be a little ambiguous in telling you what is happening" (11-1).

Additionally, some instructors commented that if they need to improve the course content or something in their core specialty, they would prefer that the consultant be an expert in the instructors' field. Alternatively, if instructors need to improve their communication or teaching skills, they would prefer someone who is an expert in the medical education field. These comments reflect the importance of having a relevant expert consultant.

"I think people in the medical education are the people who can train us, they are the professionals who teach feedback and stuff" (22-5).

"My content is such that I would need someone who would know about my content to talk to me about it" (11-1).

Fifth sub-theme: Assisting instructors in incorporating student feedback. Some instructors stated they would prefer to have the opportunity to attend alternative faculty development programs, such as workshops, that could assist them in gaining or improving instructional skills.

"More faculty development sessions is needed for both the students as well as the instructors" (21-4).

"I would need at least a workshop or two on presentations to help me to be more open, to move around, to change my voice tone, and to do this and that" (21-6).

Sixth sub-theme: Exposing students to the utility of feedback. Many instructors indicated that students complained that they did not see any changes resulting from their feedback, and these students questioned how the feedback they provided to their instructors were being dealt with. This highlights the importance of the implementation phase of the feedback.

"Up to now, because one of the continuous [student] complaints was that they give feedback but nothing happened. I think this is a very serious complaint" (11-1).

Another instructor explained that student feedback should be discussed with students, they should be informed about their feedback, and told about the actions taken as a result.

"Instructors should sit and discuss the [student' feedback] results with students and tell them like, 'These are your results. You said PBL was good, or PBL was not good. And just to close the loop that they know now that these are the results and we will make changes based on your feedback" (21-6).

One instructor emphasized that in case students do not see changes based on their feedback immediately, they should be assured that their feedback is still valuable to the institution, and changes might be considered in the future. For instance,

"Mostly students would just complain that we are giving feedback without anything happening to us. So [students should be informed that] there is a link between the college and students; that we are all in the same boat, so student feedback is important for improving the reputation of the institution" (21-6).

Furthermore, some instructors commented that to enhance the feedback process, students might need to be educated about the benefit of student feedback so that they could provide accurate feedback.

"The students should be very well oriented on what evaluation is, and on what feedback

is, so they can be able to give feedback about certain subjects and things that are really

needed to improve their educational process" (21-4).

Theme three: Use of student feedback. This theme emerged from answers to six

questions that were asked in the Interview Guide for the Instructors' E Group, and from six

questions asked in the Interview Guide for the Instructors' C Group. These questions are outlined

in Table 14.

Table 14

Theme three: Interview Questions for Instructors

C Group	E Group
• Do you think if you had received feedback in a timely manner from students, you would have been able to adapt and change? If yes how?	• Was the timeline for receiving feedback long enough for you to implement any suggested or required changes?
• Have you made any changes to the course?	• Have you made any changes based on student feedback? If no why? If yes, what?
• To what extent do you think receiving student feedback in a timely manner is important?	• To what extent you think feedback delivered in a timely manner from students is important?
• What perspectives and experiences do you think should be brought to the feedback process and implementation?	• What perspectives and experiences do you think should be brought to the feedback process and implementation?
• What environmental or organizational settings, or other factors would you feel enabled or hindered feedback implementation?	• When is students' feedback valuable and easy to implement in comparison to your students' feedback in this study?
• How would you characterize the strengths and weaknesses of receiving student feedback in a timely manner?	• How would you characterize the strengths and weaknesses of receiving feedback in a timely manner by students?

In this third major theme, instructors explained that some student feedback could be easily accommodated, while other requests for changes could not be. Specifically, they noted that changing instructor performance including PBL orgnization based on student feedback can be easily controlled and accommodated; however, the process is much more complex in trying to address students' feedback about PBL content. Most instructors also explained that when they take action to accommodate student feedback, they categorize the changes requested into either instructor performance or PBL content.

It was reported that instructors preferred to receive student feedback as soon as possible, so that changes could be made right away.

"I think student feedback about the performance; at least personally, if it is valid, I will change it right away. It would be nice to receive [feedback about] the content early on, as well, because it takes forever for changes to happen" (12-4).

Some instructors indicated that student feedback during the block would help to adjust the performance needed.

"Student feedback should be done during the block and after the block. During the block, it will help to improve the instructor's performance." (11-1)

However, instructors noted, they were unable to make changes to the PBL content based on student feedback, even if they still kept receiving comments on it because [any changes] had to be done through the curriculum committee, and this takes time. For instance, an instructor stated:

"Student feedback is hard [to take action on] if it is about the content of the PBL content. Because you have to send it to the curriculum committee, they have to decide, and then it

will be changed. And that's an obvious challenge, which we are not able to overcome"

(22-5).

Another instructor reported:

> "We try to change a lot of things which students have raised [about the content], and
> already we had a meeting as instructors. We revised, the PBL and we took the thing
> which needed to be changed in the construction of the PBL and the topics itself.
> Unfortunately, there is no change in this area easily. So, when every student in every
> batch [places the] same complaint regarding the same point and we can do nothing
> immediately, so this is very bad" (12-2).

Student Interview Responses

This section will begin by analyzing the results from conducting one-on-one interviews with 61 (18%) students (both male and female) of the total students. In analyzing the results, student responses were grouped according to major themes and sub-themes, which are presented in this section. I begin by presenting the student demographics, followed by the themes and sub-themes that emerged from the interviews with students.

Demographics. The researcher conducted interviews with a total of 61 students: 42 (69%) men and 19 (31%) women. Thirty-three students were from the E group, and 28 were from the C group (see Appendix B11 for student demographics).

Themes. In the following section, the themes and sub-themes that emerged from the student interviews are presented. These themes and sub-themes emerged from the interview guide that the researcher used (see Appendix A3 for the interview guide).

Theme one: The importance of student feedback. This theme emerged from five questions in the Interview Guide for Students. These questions are listed here:

- In your opinion, what is the purpose of student feedback to instructors?

- Do you feel you can be completely honest without any fear of reprisal or of giving disrespect when you provide feedback of an instructor?

- Do you think there are barriers for implementing student feedback? Please specify.

- What will encourage you to provide effective feedback to your instructor?

- To what extent do you think student feedback is beneficial in enhancing instructor?

In this first major theme, students indicated that their feedback is important because it helps instructors improve instructor performance, which, in turn, enhances student learning and the institutional learning environment. Analysis of the student data resulted in identifying the following two sub-themes, which students acknowledged as being of primary importance: a) Students view student feedback as important for instructor professional development; and b) Student feedback is imperative for improving student learning. Each of these two sub-themes is discussed below.

First sub-theme: Students view student feedback as important for instructor professional development. Most students who were interviewed indicated that their feedback is important because it helps instructors to have better insight into their performance, both strengths and limitations.

"[When I give feedback], I focus on the strong points to improve [them] and on the weakness points to try to improve them and exclude them" (22-2).

As evidenced by the following quote, many students indicated they were motivated to provide student feedback to their instructors.

"I actually always complete my evaluations seriously and daily and also I don't give any disrespect while I'm going to criticize his performance" (21-16).

"I take it very seriously because I [seriously] hope that my feedback will be granted or

will be taken seriously and I would see some for improvement later" (22-7).

Some students also recognized that one of the purposes of student feedback is to help

administrators evaluate the instructors, which ultimately improves the learning process in

general.

"The feedback is for the administration, to know the performance of the tutor and how

the students think about the tutor" (21-12).

"The aim of student feedback to the instructor is to improve the instructors. So, as a

result, improving the whole of medical education or education in general. The instructor

is important or the key element in the education process" (21-7).

Most students indicated that student feedback is important because they can be the best

source of evaluating their instructors' performance. Since they are ones on the front line directly

observing instructor teaching performance on a regular basis, students expressed that they were

in the best position to provide relevant reflection on an instructor's performance. Moreover, they

affirmed that one of the purposes of student feedback is to improve quality instruction.

"I think the students are the ones who are affected by the instructors and their skills.

……the student is more able to see the instructor and his skills and his way of teaching

sometimes" (21-14).

 "It's very important to enhancing the performance of instructors and of changing some

of their ways of lecturing or explaining things" (21-28).

Although some students expressed their awareness about the importance of student

feedback, they simultaneously voiced some doubt that any actions were taken as a result of their

feedback.

"I mean as a concept, it is supposed to be that way. But that's not always the case because sometimes we evaluate certain topics and we don't necessarily see a change. There may be a change that is in progress that we still haven't seen. But, I don't think that it is always followed by a change" (21-42).

"There is a question that the students always ask, "Does student feedback affect the process of our learning or not, or is it just to do extra work, or extra thing that they have to do every day or every week?" (21-7).

Second sub-theme. Student feedback is imperative for improving student learning. Students articulated that their feedback is important because when implemented, instructor performance improves, thereby benefiting students and raising the instructional quality.

"I think the improvement of the instructors is improvement for me" (21-37).

"It is very important if it completed its main purpose. And I think it's very beneficial for both the instructor and the students. From the instructors' side, it's going to be much easier for them to teach the students and the students are going to be effective in class and more effective in studying" (21-16).

Theme two: The process of student feedback. This theme emerged from answers to eight questions that were asked in the Interview Guide for the Students. These questions are listed here:

- Do you feel you can be completely honest without any fear of reprisal or of giving disrespect when you provide feedback of an instructor?

- Do you take evaluations of instructors seriously?

- Do you think there are barriers for implementing student feedback? Please specify.

- Do you recommend having continuous evaluation of your instructors during your study, or do you think that student evaluations completed at the end of each course are good enough?

- Have you given any feedback to an instructor before and during your current study?

- Could you specify any factors that might affect your evaluation of an instructor?

- What will encourage you to provide effective feedback to your instructor?

- To what extent do you think student feedback is beneficial in enhancing instructor performance, and student learning, and what benefits might be reflected back to the students?

In this second major theme, students offered insights regarding factors that could affect the student feedback process. Students expressed preferences that their feedback should be confidential and non-compulsory, and that students should be educated about the feedback process. From this theme, three subthemes emerged: a) ensuring student confidentiality; b) raising student awareness about utility of student feedback; and c) Improving Feedback Logistics. Each of these three sub-themes is discussed below.

First sub-theme: Ensuring Student Confidentiality. Many students expressed that some barriers could impact them in providing transparent and honest feedback to their instructors. One of the main barriers that most students identified was a lack of confidentiality and the need for anonymity in offering feedback.

"I think that I will be afraid when the instructors know my name. I am afraid of you knowing me when I write an honest feedback" (21-38).

"I think confidentiality is very important and I have to know that everything here is confidential" (21-7).

Moreover, some students indicated that the feedback process should be designed to ensure that they would not be negatively impacted by providing feedback. In other words, students should be assured there is no potential for negative ramifications to them.

"If I am sure that it will not affect my grades and my relationship with the instructor, [then] I will be honest. But honest doesn't mean disrespectful, so I can give the feedback very honestly" (21-32).

More specifically, students identified that when they do an online evaluation, one of the factors impacting the student feedback process is that they are not sure whether their confidentiality is protected or not.

"I prefer paper based [rather] than online because you don't have to go through your [university] account" (21-6).

"[When we use the online evaluation], we have to put [our] username and password. You don't know if it is confidential or not. We don't know if the evaluation department can read your name or not" (21-6).

Some students explained that one deterrent to the feedback process is small class size, such as in the PBL sessions, where there is an increased risk that the student providing the feedback may be identified.

"[If it is a] small group, your voice will definitely be heard and your opinion of that instructor will be known. But, at the same time, I think your anonymity . . . will be compromised. If the teacher takes it the wrong way, that may backfire and he evaluates you and he's the one that has the grades so" (21-42).

"A small group makes a barrier to do the evaluation. But, if it's a big group, that makes it

comfortable, and that makes me comfortable, and there is no barrier for the evaluation"

(21-22).

Many students indicated that filling out an evaluation form while the instructor was

present, would also impact how much they would disclose. For instance, one student stated:

"If I am supposed to do an [honest] feedback, I should not do it in front of the instructor

because some instructors will see you write a lot of things [and subsequently know who

provided that feedback]" (21-3).

"It depends if instructor is [present or not]. I am afraid of that, but if the instructor is not

in front of me, I will give off the real evaluation to the instructor" (21-30).

Second sub-theme. Raising Student Awareness About Utility of Student Feedback.

Interestingly, almost all of the students reported a lack of awareness about the purpose of student

feedback, being inexperienced, lacking confidence, and feeling influenced by other students in

providing evaluations. Most students seemed to have first been exposed to evaluating instructors

when they enrolled in university.

"Before in high school, I didn't do any feedback. I don't have any idea, I don't know the

whole idea about it. When I came to the university, it was like sudden to me, like I should

give feedback to my instructors" (21-8).

"No, I have never given any feedback" (21-9).

Many students commented that they do not really understand the feedback process,

why it is done, what is done with the results, and so on.

"I don't know what they are thinking. I don't know how they're taking it. I don't know what judgements they are coming up with . . . because I am just filling in a form" (21-2).

"If I know that they are really taking it into consideration and my evaluations are getting to the instructors, this will affect my evaluation" (21-1).

Also, many students expressed that training around the student feedback process would be most useful since they were not educated enough about the evaluation system to understand the reasons behind using it.

"So that's why it should be emphasized that there is a purpose behind that and we should also learn how to convey the information or points or opinions that you have in a form that will be digested from the person who will read the feedback" (21-8).

"The process and the benefit of feedback was not explained to me. I don't know if they explained it to anyone, to the others" (22-16).

"When I entered the university, they didn't tell us it's to improve the instructors' performance, but rather they told us it is a standard so you can see your grades online" (21-16).

Some students expressed concern that given obvious differences in knowledge levels between instructors and students, they could not provide useful feedback to instructors.

"Most of the time, the instructor is like a professor or something and he thinks "Who are you to evaluate me? Maybe you don't understand, but the other students [understood]. Yet, actually, all the students agreed that your style of teaching is not so good" (21-11).

Many students indicated that their evaluation might also be affected by what their peers thought. For instance,

"Talking with my peers will make me see things that I could've seen and make them see things that they couldn't see and they can tell good things that they are thinking about and that's how human being interact and make their opinion" (21-2).

"Sometimes our voice may not reach them so maybe this will reach if we give them the same idea of the answers" (21-38).

Third sub-theme. Improving Feedback Logistics. Within this third sub-theme, time was of central importance for students in providing feedback. They expressed the need to have sufficient time to produce their feedback, and related to this, requests for student feedback should be made at the appropriate times. For instance, some students commented that they need to be given enough time to fill out the evaluation form carefully.

"The time is short for me and sometimes I just want to write anything just to finish it early" (21-8).

"Not easy when getting to the evaluation. Sometimes, you have less time and sometimes you are doing a favor for someone in evaluating them, so you are going to just do everything quickly" (21-20).

As the student remarks below suggest, when rushed for time to complete, feedback quality and quantity from students will be compromised.

"To be completely honest, it depends on the context. I mean if, if, if I don't have anything to do. If you're not asking me at a time that I'm busy, I'll be more than happy to fill out any survey you want me to fill out and read each and every question carefully. But, if you ask me . . . before an exam [or] just before my break, I'll try to just jot down anything" (21-42).

"[If] the feedback does not fit with my schedule, I quickly write the evaluation" (21-5).

All students stressed that doing evaluations in a timely manner is important in order for them to not forget important things that happened, and to provide accurate feedback.

"That's better because at the end of the course, I forget what happened. If I don't like something in the beginning, but at the end of the course the instructor's alright, I will [give] him high scores, but at the beginning he was bad." (21-40).

Most students additionally commented that they preferred providing continuous evaluations but not frequently (i.e., daily). Instead, providing middle of block instructor evaluations was considered preferable.

"We know that in the middle of the block or maybe at the end of block, we will know that the doctor is good or bad" (21-6).

"The daily evaluation I seriously [think] it's a waste of my time, so I randomly write the numbers" (21-38).

"I think evaluations do not have to be done on a daily basis. . . if it's done in the mid-block or at the end of the block, I think that may be just enough" (21-41).

"I think mid-block and the end of the block would be enough" (22-4).

Some students further noted that they preferred a mid-block evaluation because the feedback could be of benefit to them, and they could provide a clearer assessment of both the instructor and the course.

"Evaluation at the end of the block doesn't really benefit us as it benefits the ones that are after us. So, if they would do a mid-block, it would be more beneficial for us" (22-9).

"But I really want to give feedback about the exam or the quizzes' stuff. If they just ask us to do the evaluation at the end of the block, it will not allow us to comment what we need to about the exam" (22-5).

"I prefer the end of the block because you will get a complete picture" (22-1).

Most students expressed that they preferred evaluations to be optional because it was their view that this would result in students providing more honest feedback, rather than just doing it because they were required to. This is illustrated in the following student comments:

"If you want to take feedback, an honest feedback, you don't have to make it mandatory. You want to make it an option to have the student write it himself to give you the feedback, not to take it from him "(21-15).

"If the feedback is mandatory, we will do it because it's mandatory. But, if you make it optional, and the people who would care to evaluate will give you an honest evaluation" (21-17).

Some students pointed out that they would like to be notified in advance about the time when they would be required to do the evaluation, so that they could be prepared in giving it.

"We need to prepare our time, and our ideas, but if I wasn't prepared to give feedback and then you suddenly ask us for feedback, for example, for something general or something very important, I can't think of very important points that you want in the same minutes at the same time" (21-14).

Some students said they would prefer to complete their evaluations in a location other than their class, while others expressed they would prefer to provide their feedback through an online system so that they could do it anywhere.

"You can do it online, that's the beauty of the evaluation. I can do it here in the university and I can go home and do it. I'll do it if I have time to do it" (21-27).

"If it is in a program that you can reach easily in your phone, it will only take you two minutes" (21-24).

Theme three: Use of student feedback. This theme emerged from answers to five questions that were asked in the Interview Guide for the Students, and are noted as follows:

- Do you think there are barriers for implementing student feedback? Please specify.

- Have you given any feedback to an instructor before and during your current study?

- Have you noticed any changes in any of your instructors based on your feedback?

- What will encourage you to provide effective feedback to your instructor?

- To what extent do you think student feedback is beneficial in enhancing instructor performance, and student learning, and what benefits might be reflected back to the students?

In this third major theme, students indicated that they wanted to see for themselves the results of the feedback they provide, and that their feedback would not solely be used to benefit future students only. These remarks by students indicated that they want to see for themselves the resulting changes in instructor performance, specifically in the mode of teaching and in improvements to their learning environment. Students also commented that knowing their feedback is being used and observing such changes based on their feedback would encourage them to continue giving feedback, as well as help them feel appreciated.

"If I don't see any improvement, it's not worth it to do the evaluation. That's it" (21-37).

"If I noticed from my previous feedback that something happened or something has changed, this would encourage me to give [feedback] properly" (21-7).

Some students expressed that they did not take the process of offering feedback to instructors seriously because they believed that only later learners (i.e., those who would be taking the course after them) would see the resulting changes and reap the results.

"I do [take feedback seriously]; sometimes students do not take it seriously because they

think that their results will affect the batch that comes next year, but not now. That's why

they don't take it seriously. This is the clear barrier" (21-7).

However, some students indicated they are more motivated to evaluate because they want

to see the results from the feedback they have provided about instructor performance such as

time management and the organization of learning sessions that include clarity in the PBL

objectives.

"[We expected from our feedback that there would be a change in] the way that the

instructor gives the [PBL] session, [and in] the amount of time [the instructor] takes to be

sufficient and [that the instructor would] also achieve all the [PBL] objectives and make

them clear again" (21-9).

"[We need to evaluate our instructor's performance] like in lectures or PBL sessions;

maybe [we] could [evaluate] lectures or PBL sessions every week. But for the

instructor's performance, I think at the end of the block is good" (21-12).

Mixed Methods Results

Deeper Insights about the Effectiveness of Timely Student Feedback

This section describes the results of merging the data collected to provide a deeper

understanding of the effectiveness of timely student feedback. First, Table 15 presents a

summary of the quantitative and quantitative results and then the merged results in order to

extract possible new insights that might not be as apparent by viewing quantitative and

qualitative results separately (Creswell & Clark, 2011). Then, in the paragraphs following the

table, a side-by-side comparison is presented that shows the quantitative results first, followed by

the qualitative results in the form of quotes (Creswell & Clark, 2011). This structure will assist in

examining the similarities and differences between the quantitative and qualitative data for the three areas of commonality and uniqueness found for this study: 1) The effect of timely student feedback based on the questionnaire items from all student evaluations; 2) The effect of timely student feedback, by gender; and 3) The effect of timely student feedback, by stream. Then, the results that are presented here will be discussed further in Chapter five.

In Table 15, in the row titled, "Effect of timely student feedback based on questionnaire items," two variables are indicated: "Instructors change in performance" and "PBL session organization." The quantitative column in this row summarizes whether the student ratings showed a change in instructors' performance or PBL session organization for instructors who received timely feedback and those who did not. Then, the qualitative column shows whether students said they perceived changes in instructors' performance and PBL session organization, and whether instructors said they made changes based on receiving timely feedback. It is noted that statements between students and instructors were consistent for each finding of the three areas listed in the table. Then, the Mixed Methods column indicates whether the quantitative results were consistent with the qualitative results.

As shown in the first row of the table, students did not report a significant change for instructor performance when feedback had been given, according to the quantitative results. However, as shown in the qualitative column, instructors who had received timely feedback did state that they made changes based on the timely feedback they received, and students had also stated in the interviews that they noticed changes. Thus, comparing the results from the two data sets brought to light a difference between the quantitative and qualitative results: although the quantitative results showed that no significant changes had been made in instructors' performance based on timely feedback, the qualitative results indicated that instructors had

indeed made changes as a result of the feedback they had received, and students believed that changes had occurred. Then, the mixed methods column shows whether the findings from the quantitative and qualitative data columns matched. The following rows subsequently show the results of timely student feedback for PBL session organization followed by the results of the effect of timely student feedback based on gender (male and female) and streams (S1 and S2).

Table 15

Match Between Quantitative (Student Ratings) and Qualitative (Instructor and Student Interviews) Results

Three areas measured	Type of evaluation	Data sets		
		Quantitative	Qualitative	Mixed Methods
Effect of timely student feedback based on the questionnaire items for all student evaluations	Instructors' change in performance	No significant difference between the E and C groups	Instructors and students indicated changes were made	*Different*
	Change in PBL session organization	Significant difference between the E and C groups	Instructors and students indicated changes were made	*Similar*
Effect of timely student feedback by gender	Male students' evaluation change scores	Significant difference between the E_M and C_M groups	Instructors and students indicated changes were made	*Similar*
	Female students' evaluation change scores	No significant difference between the E_F and C_F groups	Instructors and students indicated changes were made	*Different*
Effect of timely student feedback by streams	S1 students' evaluation change scores	Significant difference between the E_{S1} and C_{S1} groups	Instructors and students indicated changes were made	*Similar*
	S2 students' evaluation change scores	No significant change between the E_{S2} and C_{S2} groups	Instructors and students indicated no changes were made	*Similar*

Effect of timely student feedback based on the questionnaire items for all student evaluations. In this section, the quantitative and qualitative results are presented first about instructors' performance, followed by the quantitative and qualitative results for the organization of the PBL sessions.

Quantitative and qualitative results for instructors' performance items. The quantitative results showed that the instructors who received timely feedback did not show more change in their performance, compared to those instructors who did not receive timely feedback. However, the instructors who receive timely feedback stated in their interviews that they *had* made changes to aspects of their teaching, based on the timely student feedback that they received after T_1, as indicated by the following quote:

> "When I received the evaluation, I found there was a point about enthusiasm . . . so I tried to show more enthusiasm and tried to change my way of teaching and I felt that the students were more satisfied" (11-7).

Moreover, in their interviews, students from the E group indicated that after giving their feedback in T_1, they had noticed improvement in aspects related to their instructors' performance, as indicated by the following quote:

> "We noticed a difference in most cases in the block and scheduling. With the way they have to teach, [for example] we complain about the schedule that we don't have enough [time] and they changed it. He did a great job and we noticed the difference" (21-40).

Quantitative and qualitative results for PBL session organization items. The quantitative results showed that the instructors who received timely feedback showed more change in the organization of their PBL sessions compared to the instructors who did not receive any timely feedback. At the same time, the E group instructors reported in the interviews that

they had also made changes related to aspects of the PBL session organization items, based on the timely student feedback they had received after T_1. Following are some quotes from the interviews with the E group instructors about the changes they made related to aspects of PBL session organization, after receiving timely feedback.

"After receiving the feedback, [students] said there was a need to [improve] the objectives. Students didn't like [the PBL] objectives [because they found them unclear] so they usually preferred to use the medical clinical-related objectives. So, I tried to link [the PBL objectives to the medical clinical-related objectives]. Sometimes, I also advised them to read certain books [to augment their learning]. [Then,] I saw changes in their performance" (11-3).

"[The student feedback indicated that] the students were not very much pleased with the way of the session. So, I tried to figure the problem out and tried to make [the students] more incorporated in the process of the PBL by describing the methodology" (11-1).

Moreover, students from the E group indicated that after giving their feedback in T_1, they had noticed improvement in aspects related to PBL session organization, as indicated by the following quote:

"Yes, in my PBL, the instructor changed when I told him he needed to . . . inform us a little bit about this study. We said it warmly and we said give us very important points in the PBL" (21-14).

In conclusion, there was consistency in the quantitative and qualitative results for PBL organization improvements but not for instructor improvements. That is, students reported that they observed improvement in how the instructors organized PBL sessions, when those instructors received timely feedback, and their instructors reported they made changes related to

the PBL organization, which was reported in the quantitative ratings. However, students and instructors also reported improvement in instructor performance when instructors were given timely feedback; however, this change was not detected in the quantitative results. Thus, quantitative and qualitative results were consistent for PBL organization but not for instructor performance.

Effect of timely student feedback by gender. In this section, male participants' results from the quantitative and qualitative data sets are presented first, followed by the female participants' results from both data sets.

Quantitative and qualitative results for male participants. Regarding the quantitative results, male students indicated that instructors who received timely feedback showed more change in their performance and PBL session organization compared to instructors who did not receive any timely feedback. Similarly, most of the male students from the E group stated in their interviews that they had noticed a change in the performance of their instructors in T_2, compared to T_1, as noted by the quote below:

> "The doctor was not good, but after the evaluation he improved . . . there was
>
> improvement in the structure" (21-21).

Additionally, the instructors indicated that when male students provided feedback, it helped them to make changes accordingly.

> "One of the things for example I tried to increase was the enthusiasm, which I have
>
> seen in the student feedback, which is mostly undecided" (11-5).

> "The feedback that I received was relatively good. Yes, I did make changes" (11-6).

Quantitative and qualitative results for female participants. In the quantitative results, the female student evaluations measuring instructor performance and PBL session organization

indicated that the instructors who received timely feedback showed no change compared to the instructors who did not receive any timely feedback. However, most female students indicated in their interviews that they recognized that their instructors accepted student feedback and that students saw changes based on their feedback.

"When we give them feedback about our problem, there is some change" (22-12).

"She changed her way and explained certain things more after we sent the evaluation. We said that it's not beneficial, we don't understand, there is nothing that we can even find on the Internet, we need to search it in the book for two hours [so her instruction was not thorough enough]. Then, she did her instruction with a new method in which she explained for one hour and the second hour was student oriented. And now, it's good for both instructor and the student" (22-9).

Moreover, female students indicated they already had been engaging in an ongoing, open dialogue with their instructors throughout the block wherein students provided feedback to their instructors.

"Like in our group, we were [always] allowed to give our own opinion. . . The things we discussed, our instructor fixed the other day. And even if there was a problem, I [would] give her feedback while in the session, so she would work on that" (22-8).

"After a week [from starting the block], she started asking about her performance" (22-3).

In fact, some female students indicated that they were used to providing feedback to their instructor after every session.

"We do provide feedback every after session and she does take it seriously" (22-1).

In addition, an instructor from the C_F group indicated that she asks for and receives student feedback on a continuous basis, and then applies it.

"They ask me [to help them] make their objectives so that they are more focused when we study and [so they are] not lost. So, I tried to help them out with the objectives, which actually I shouldn't be doing. But, because they gave me feedback that they are really struggling, so we did, I did it. Other than that, nothing really, the time was good, the dynamics, everything was good" (22-5).

"We take [student feedback] after when we finish one PBL case. So, there are little things that they ask for, for example, we have to manage the time in a better way, or if the objectives were too broad, they were not that good. So, they are adjustable, we can adopt it very quickly, no problem" (22-5).

A female instructor from the C_F group also mentioned that her students always compare her performance and achievements with the performance of other instructors and groups in different PBL classes.

"They did compare how are their friends are doing in the other group. They will compare what objectives their friends got, what objectives my students got, how much my students know, how much the other students know. [They also ask] how I helped them achieve, [and] how much [the other students] achieved. So, they have come to me again and again." (22-5).

Moreover, many instructors also commented that they receive student feedback directly from students, and subsequently apply it.

"It's mostly [received] from my students, not from the university. No faculties [have] received [the results of student feedback from the university]" (12-4).

Another female instructor commented that when she asked for feedback from her students, they also asked her to provide them with feedback.

"I would prioritize the students giving me feedback, but the students, last time around,
said we prefer that you [also] give us feedback [when] we give you feedback . . . . And I
did, during the following sessions, because we had extra time" (12-4).

Female instructors from both the E_F and C_F groups indicated they encouraged their
students to provide feedback at any time. One instructor also tried to explain to her students how
to provide valuable feedback.

"All the time, I encourage them to say the negative before the positive, and I say to them
that the negative will improve. So, the positive thing is good. No problem, you people
can say the positive, but when you give the negative, it will be more valuable" (12-2).
"Students were pleased that I changed it next session. . . I do always tell them I can take it
when there is negative feedback. So, I won't take it personally" (12-4).

"I try to explain that the students are like the instructors; they vary. For example, [I tell
them you should provide feedback] about the case. [I say] we didn't do some things well.
[For instance], if I did not clarify certain things, some objectives we missed, so we have
to go case by case . . . did I manage the time [well]? And were the group dynamics either
good or not good? [I tell them give me] anything you can as your feedback. So that is
why it has to be from every case to case, you have to give me feedback" (22-5).

In summary, there was consistency in the quantitative and qualitative results for male, but
not for the female participants. Male students reported that they observed improvements in
instructor performance and in how instructors organized the PBL sessions when those instructors
received timely feedback, and their instructors also reported in the interviews that they made
changes related to their performance and to PBL organization, based on timely student feedback.
Moreover, female students reported that they had noticed changes in their instructors'

performance and PBL session organization, based on timely feedback. Female instructors, in their interviews, also reported that they had made changes to their performance and PBL session organization, based on receiving timely feedback. However, there was no reported significant improvement in instructor performance or PBL organization reported in the quantitative ratings. Therefore, quotes from both the male students and instructors supported the male quantitative results but the quotes from the female students and instructors did not support the quantitative results.

Effect of timely student feedback by streams. In this section, the quantitative and qualitative results for each of S1 and S2 are presented respectively.

Quantitative and qualitative results for S1 participants. In the quantitative results, the S1 participant results suggested that the instructors who had received timely feedback showed more change in their performance and PBL session organization compared to those instructors who had not received timely feedback. Similarly, most of the S1 students from the E_{S1} group indicated in their interviews that they noticed a change in their instructors after T_1, as noted by the following example:

> "After the first evaluation that's in the middle of the block, I felt he was changing his [organization] or is trying to add something for us. He is trying to give us more tasks" (21-17).

In addition, students in S1 revealed that they take seriously their role in providing honest feedback, and even take steps if needed to ensure that their feedback is as accurate as it can be.

> "Sometimes, some students will say, he is a doctor and I am a student. How can I tell him something good, or tell him something new because they have this high level and I'm in the lower level, so how can I tell him something? But, I think everyone should follow the

correct thing (i.e., provide honest and valuable feedback), even at the lower or upper

level" (21-3).

"I evaluate the questions [on the evaluation forms], and if there is something I don't

understand, I will ask [Student Affairs] to tell me the exact point behind that question"

(21-8)

"If I am smart enough, I can, you know, give them information in a professional and

polite way and I try not to insult the person [but just] talk about the process because, after

all, we are [all] human beings. We always take things personally" (22-17).

Furthermore, S1 instructors acknowledged that most S1 students provide honest

feedback, and instructors are willing to make changes based on that feedback, as noted by the

following remarks:

"Because I know some of the students. Those students really they give honest

feedback if they really get knowledge from you "(21-4).

"I think, yes [when students provide feedback], they will give honest feedback" (11-

7).

"I tried to make changes especially on the time management and also the objectives"

(11-3).

Quantitative and qualitative results for S2 participants. In the quantitative results, the

S2 student evaluations measuring instructor performance and PBL session organization indicated

that the instructors who received timely feedback showed no change in these items, similar to

those instructors who had received no timely feedback. At the same time, most S2 students

expressed in their interviews that they were skeptical that anything was being done with the

student feedback that they were providing, as indicated by the following comments:

"We just hear promises . . . we don't see any results [from student feedback] so we don't believe anything. To be honest, we feel it's [useless]. We do something [i.e., give feedback], but actually nothing is getting [changed]. . . [it's] more of a show-off" (22-14).

"I still need more information. I need to know whether my evaluation is actually seen and not discarded" (21-35).

"Sadly, no, [there has been no change based on our feedback]. Most of them this year are set in their ways because they are still believing that they are greater than you are" (21-1).

Some students felt that although they were giving feedback, the implementation of timely feedback could not be easily done during the block. Therefore, these students stated that their feedback would benefit future students more than themselves.

"We are giving our information for the benefit of the coming students. It's too late to [make any changes during the block]" (21-1).

Most S2 students indicated that they felt pressured to provide feedback as a duty, rather than having the option of either providing or not providing feedback.

No, I think [students] will provide [feedback] all the time because they see it as a duty. From other guys I've seen, they see it as a duty. They have to do it because some people did it before. As I told you, I see it as a duty. My duty as a student is to do it because the ones before me did it" (21-1).

At the same time, one instructor from E_{S2} indicated that S2 students provided contradicting feedback, making it difficult for instructors to apply it.

"Students [S2 students] from the same session can give two different evaluations that are opposite to each other, which makes me think that they don't really put thought into filling it in objectively which is a bit sad." (12-4)

In addition, the instructors indicated that there were differences between students in S1 versus S2 in terms of the experience and backgrounds of each group that resulted in different expectations between what each group needed from their instructors.

"[In the] last block I had Stream one; this block I have Stream two and they are hugely different because [Stream two students] have a total background—they have a graduate degree. [Thus, their expectations of me] are totally different from the ones who are [in] Stream one. So, I definitely need feedback to adjust accordingly to their tune" (22-5).

"Yes, you get different backgrounds from different students. You will find people who are respiratory therapists, you find people who are urologists, you find people who have already graduated from other colleges and they joined medicine" (21-4).

In conclusion, the S1 and S2 qualitative results were consistent with the quantitative results. Specifically, S1 students reported that they noticed a change in the performance and organization of PBL sessions for their instructors who received timely student feedback, which was also reported by their instructors. However, S2 students reported that they believed their feedback was not being taken seriously, and their instructors reported that they recognize there are distinct differences between S1 and S2 students, and that sometimes conflicting feedback was provided from different students. Therefore, quotes from both the students and instructors in the S1 and S2 groups supported their quantitative ratings.

Summary of all Results

In summary, the quantitative data suggested no significant improvements in instructor performance over time, regardless of whether they received timely feedback or not. However, there was a significant improvement in PBL session organization over time for instructors who received timely feedback. Moreover, when both instructor performance and PBL session

organization were measured together as a total score, it showed significant improvement over time for instructors who received timely feedback. The data also suggested a significant improvement over time in instructor performance and PBL session organization when measured together or independently for instructors who received timely feedback in both male and S1 groups. However, there was no significant improvement over time in instructor performance and PBL session organization when measured together or independently for instructors who received timely feedback in both female and S2 groups.

The results from the three open-ended items resulted in four themes and 13 sub-themes. These four themes are: 1) general comments, 2) instructors' specific performance, 3) course organization, and 4) instructors' related tasks. In the first theme, students provided general comments regarding their instructors' personalities and about their instructors' performance in general. In the second theme, students offered comments about specific aspects of their instructors' performance such as how an instructor manages interactions with students as well as how well the instructor organized how students spent their time in each PBL session. They also commented on their instructors' teaching abilities and experiences. For the third theme, students mostly commented about how to improve the schedules of the PBL sessions and the corresponding logistics in order to enhance the organization of these sessions. They also offered some insights into the need to improve the content of the PBL case studies to a more appropriate level for students. In the fourth theme, students also provided comments about how to improve their instructors' role in the PBL sessions so that students' learning would be enhanced. Students also shared their desire to receive more feedback from their instructors about their performance in the PBL sessions.

The qualitative data for the instructors and students resulted in three major themes: 1) the importance of student feedback, 2) the process of student feedback, and 3) the use of student feedback. In the first theme, the interviews with the instructors and students offered the insight that both instructors and students view feedback as an important tool for instructional and learning development. In the second theme, instructors expressed some concerns about the effectiveness of the student feedback system and how the process of introducing and handling feedback to instructors might affect how instructors deal with the feedback they receive. In this theme, students expressed the concern that a lack of confidentiality could affect whether they provide transparent and honest feedback to their instructors, and that feedback logistics need improving. Students also expressed a lack of awareness about how their feedback is utilized. In the third theme, instructors pointed out that sometimes it is easier to accommodate student feedback on instructor performance rather than on the PBL content itself, which may often require more time to implement changes. Students also noted that they themselves want to see concrete results from their feedback, rather than merely understanding it will be used for future students (see Appendices B12 and B13 for summary of instructors and students qualitative results).

The merging of the quantitative and qualitative data highlighted three areas of similarities and differences. First, for the effect of timely student feedback on instructor performance, the quantitative results showed no significant change, but the qualitative did. However, for the effect of feedback on PBL sessions, the two types of data were consistent in showing improvement. Second, for the effect of timely student feedback on gender, both data sets showed change among male participants. For female students, however, quantitative results showed no improvement, but qualitative results did. Third, the quantitative and qualitative results were

similar for each stream whereby both types of results showed improvement for the first stream, but neither type of data showed improvement for the second stream. Reasons for the confirmation and contradiction of the qualitative and quantitative results will be discussed in chapter five.

Chapter Five: Discussion

Introduction

The purpose of this chapter is to interpret the findings of this study based on the larger body of literature that exists on the topic of student feedback to instructors in higher education. The quantitative, qualitative, and mixed-methods results of this study will be discussed in two main sections: the effect of timely student feedback, and instructor and student perceptions about student feedback.

In the first section, I discuss the findings for the first and fourth research questions, which address the study's quantitative and mixed methods findings. Then, in the second section, I discuss the study's findings for the second and third research questions, which concern the qualitative findings and include the perceptions of instructors and students. Also, based on my interpretation of this study's results in relation to the existing body of literature on student feedback to instructors, within each results section I also provide the implications for this study related to the use of timely student feedback. Finally, I present recommendations for future research and discuss the limitations and strengths of this study, specifically how employing a mixed-methods approach allowed for deep insight into the findings.

The Effect of Timely Feedback

The Effect of Timely Student Feedback on Instructor Performance and PBL Sessions Organization

One of the issues investigated in this study was the impact of instructors receiving timely feedback from students. Researchers have argued that it is important for instructors in higher education to receive timely feedback during courses so that they can make changes to how

courses are conducted if students indicate they are having difficulty with learning the curriculum (Bayerlein, 2014; Dewald, 2016). In this study, the effect of timely feedback was measured based on two variables: instructor change in performance and PBL session organization. The quantitative results from all student evaluations showed that when instructors' change in performance and PBL session organization were examined together, the instructors who received timely feedback showed overall change, while those who did not receive timely feedback showed no significant change. However, when instructor change in performance and PBL session organization were analyzed separately, those instructors who had received timely feedback showed more change only in PBL session organization compared to those who did not. On the other hand, in the qualitative results instructors and students described improvements in both instructor performance and PBL organization when instructors were given timely feedback. Thus, the quantitative and qualitative results were consistent for PBL organization, but not for instructors' change in performance. Reasons for these inconsistencies are discussed in the next paragraphs.

It is necessary to remember that in PBL sessions, instructors must focus on ensuring that the learning sessions are successful in meeting the learning needs of the students (Shankar & Nandy, 2014). In contrast, instructor performance, overall, is concerned more with how instructors conduct lectures in a traditional instructor-led learning environment (Egelandsdal & Krumsvik, 2017). One of the reasons that student perceptions improved regarding PBL when instructors received timely feedback may be that the students were made to feel as though they were at the center of the learning process (Diekelman, 2004). For instance, in PBL environments, Füngerlings, Schmidmaier, Fischer, and Härtl (2015) pointed out that students preferred the ability to influence the way in which PBL projects were carried out. In such an

environment, students read the learning scenarios, discover the problems or issues contained in them, discuss those issues or problems with each other, and create objectives to solve the problems or issues they find (Shankar & Nandy, 2014; Parikh et al., 2001). These steps are followed in every PBL scenario and may have contributed to students sharing their feedback and instructors consequently incorporating changes into their instructional practices.

In a similar manner, students may have recognized that there was a problem or issue in the way in which the PBL sessions were being carried out. Thus, their ability to provide timely feedback to an instructor became a real-world extension of the PBL scenarios in the classroom. The students were able to determine that a problem existed and may have decided that one way to address and correct the problem was to provide feedback to the instructor. In this situation, it was the students' ability to address the problem of poor instruction by providing feedback to instructors that may have encouraged students to be honest and forthcoming with their concerns. Since students were already accustomed to providing feedback in a PBL environment, it may be that providing feedback to an instructor was not something they feared or perceived to be unimportant (Mayo et al., 1993).

The finding that students perceived their PBL sessions to improve when they were able to provide timely feedback may indicate that students are more interested in providing feedback when they are responsible for their own learning because they are at the center of this type of teaching method. In other words, students must achieve success in each of the steps of the PBL process before they can move on to the next steps to finish each topic in the PBL sessions. Since the learning is student led, to achieve success in each step, students must understand how to successfully and fully perform each step. Furthermore, the fact that student perceptions of instructor improvement occurred only in the PBL sessions may also indicate that students may be

more motivated to provide feedback when they are responsible for leading their own learning because their mark depends on how they lead. Thus, when students themselves are able to lead the learning environment by engaging in PBL, their feedback to instructors may be more honest and transparent, and such feedback may be more worthwhile to instructors for improving classroom behaviours and performance. However, the qualitative results indicated that instructors who received timely feedback reported in their interviews that they made a change in regard to PBL session organization as well as in the aspect related to instructors' change in performance based on the timely student feedback received. Also, their students reported in their interviews that they noticed the change related to PBL session organization as well as in instructors' change in performance. These observations were from the instructor and student interviews but were not consistent with the findings of significance in the quantitative change scores.

One possible explanation for the inconsistency between the quantitative and qualitative results about instructor change in performance is that during the interviews, students from the experimental group were asked an open-ended general question about what changes, if any, they had noticed based on the feedback they had provided after Time 1. Similarly, instructors were asked in the interviews if they had made any changes based on the student feedback they received. When answering this question, both instructors and students possibly linked improvement in instructor performance or in PBL session organization together, as they did not exactly recall which item fit under a particular category (i.e., in either the PBL session organization category or the change in performance category). To explain further, if students saw an improvement in either category, they possibly expressed this as a positive change overall. Similarly, if instructors made changes to their performance based on feedback about PBL session

organization, they may have expressed in the interview that this was a positive change in their overall performance. Another explanation is that although the quantitative data captured the amount of change, specifically that there was no instructor change in performance, this does not mean that no change took place. On the other hand, qualitative data captured that change occurred, but not the amount. Consequently, two approaches were indicating two different measurements; therefore, it makes sense that each gave a different perspective on the particular results. Thus, the student evaluation outcomes from the quantitative portion were convergent with the comments from students and instructors in their interviews about the effect of timely student feedback on instructors' change in performance and PBL session organization.

Moreover, examining the effect of timely student feedback on instructors' change in performance and PBL session organization for each gender and stream allowed for a fined tune discrimination of change as relevant to men and stream 1 only. For example, the quantitative and qualitative results of stream 1 indicated changes in both of the two variables separately and together, while the quantitative and qualitative results of stream 2 indicated no changes in either of the two variables when examined either separately or together. These differences are discussed later in this section.

The use of timely student feedback on teaching methods. The timeframe suggested in this study for the collection and delivery of timely student feedback to instructors (i.e., that feedback should be collected in the middle of the block and at block end) was specifically for instructors using a PBL teaching method for medical students and using a study block curriculum design. However, this suggested timeframe could also be applied in the following two conditions. The first condition is when the same instructor teaches the same students during the whole study block or semester on a certain subject. In this study, it is worthy to note that the

same PBL instructors were assigned to teach the same group of students for the whole study

block: specifically, a PBL instructors met 21 times with students. However, with different

teaching methods, two instructors or more might be assigned to teach the same group of students

a certain subject in a semester or a study block. However, having different instructors teach the

same subject to the same group of students at different times would not allow students enough

time to adequately evaluate an instructor; thus, such a scenario needs more exploration in a

further study to determine the appropriate timeframe for the collection and delivery of timely

student feedback. Second, this timeframe could also be used when students are responsible for

doing tasks with the same instructor in a particular subject or teaching method. For instance, in

PBL sessions, students are responsible for fulfilling all of the PBL steps to complete a case

scenario, which will likely increase their engagement in providing feedback relevant to learning

outcomes. In a traditional lecture format course, where students are required to complete

assignments, make presentations, and complete mid-term exams or quizzes, they can be

encouraged to provide relevant feedback on their instructor's performance to improve his/her

instructional practice, which will, in turn, impact the students' achievements. Moreover, it is

important to recognize that implementing timely student feedback is essential for developing and

improving the teaching performance of instructors and for improving the quality of courses.

However, if instructors merely evaluate themselves by the grades that their students achieve, or

by the instructor's completion of certain tasks or the syllabus, but not by student feedback during

the block, they will not be privy to understanding how students view their teaching ability.

Knowing students' perspectives about an instructor's teaching is distinct from students'

performance. This distinction is especially true in medical colleges, where typically high-

achieving students are accepted into medical school. Consequently, the high marks of students

may not necessarily reflect excellent instructor performance, but rather students' own hard work to achieve good grades. Nonetheless, excellent teaching by instructors is important as effective instructors can use a variety of teaching methods or techniques to supplement and enrich learning.

The Effect of Timely Feedback by Gender

The mixed methods approach that was used in this study helped the researcher understand gender differences in the giving and receiving of timely student feedback. The quantitative data showed that male instructors who taught male students improved their instructor performance and PBL organization based on the timely feedback they received from male students. However, the female instructors who taught female students did not improve their performance or PBL organization when receiving timely feedback from female students. On the other hand, the qualitative data that were collected from the students and instructors helped to explain the differences in the results received between the male and female students. In the interviews, both groups of students explained that they were willing to provide accurate and honest feedback about their instructors. However, through the interviews light was shed on the fact that before the feedback questionnaires were distributed female students had already been providing feedback to their instructors through ongoing discussions in most PBL sessions. In contrast, male students in the experimental group had only provided feedback to their instructors with the Time 1 results at the middle of the block. In this regard, the difference in change in performance and PBL organization for the instructors might have been a function of how and when feedback from male and female students was delivered. Therefore, if the quantitative scores were being examined to detect any change between the experimental and control groups, but the female control group was not a true control group because they had already been giving

feedback on an ongoing basis, then the quantitative results would not capture a change in instructors' performance or PBL organization. In this case, the qualitative data could show whether some type of change was occurring, but not its amount.

Although Ahmadi et al. (2001) reported in their study that men and women generally provide the same feedback, the current study appeared to show different results. That is, while male and female students were both willing to provide feedback, they did so in different ways. The male students provided feedback when they were asked for feedback while the female students indicated that they *regularly* had *on-going conversations* with their instructors about issues or concerns with PBL sessions.

Based on the open-ended questions from the questionnaire, the researcher also noted that there was a difference between male and female students in the type of feedback they provided. Male students provided the most feedback specific to the performance of their instructors. In contrast, female students provided feedback about their instructors' specific performance in approximately as many times as they provided general comments related to issues of their instructors' performance and personality. This finding is similar to O'Hara et al.'s (2000) study, which found that male and female preceptors provided different types of feedback to students. That is, women seem to be focused on performance and behaviour when providing feedback to both students and instructors. While O'Hara's study was based on the feedback preceptors gave students, the present study was based on the feedback students give instructors. O'Hara's study is important, however, because it showed the differences between how male and female students conduct assessments.

The issue of gender differences in feedback was also found to occur between male and female instructors in this study. The male instructors who were interviewed explained that they

did not make any changes to their PBL practices and behaviours until they received feedback from students. The male instructors also explained that if they did not receive any feedback, then they perceived their performance to be satisfactory, meaning that it was assumed to be appropriate for the needs of the students. In comparison, the female instructors from both the experimental and control groups who were interviewed explained that they *regularly* sought out feedback from students. The female instructors also indicated that they trained their students about the feedback process. Thus, administrators must be cautious when using the results from formal student feedback tools if they are measuring instruction improvement because some instructors may already be integrating timely feedback into their classes on a regular basis, which could affect the results that administrators receive when measuring instruction improvement. In conclusion, both data sets converged in showing that timely student feedback was effective for both male and female instructors.

The Effect of Timely Student Feedback by Streams

The mixed methods used in this study also helped the researcher to understand whether differences existed in the timely feedback that was provided between students who were new to post-secondary study (i.e., stream one or novice participants) compared to those students who already had an undergraduate degree (i.e., stream two or advanced participants). The quantitative data that were analyzed by stream showed that the instructors who taught the novice students improved in instructors' performance and PBL organization as a result of receiving timely feedback from the students. In contrast, the results showed that the instructors who taught the advanced students did not improve in instructor performance or PBL session organization as a result of receiving timely student feedback.

The responses obtained from the interviews provided additional information about why the differences in instructor improvements may have occurred, based on whether instructors received feedback from novice or advanced students. Advanced students explained that they completed instructor evaluations even though they were skeptical about seeing any changes occur. Most of these students also noted that they had negative experiences in the past wherein they did not see any changes in instructor behaviours from the feedback that they had provided. Furthermore, some of the advanced students explained that they perceived that instructors were not willing to change and that some instructors saw no need for feedback from students. Overall, the advanced students provided feedback with the assumption that they would not see any immediate results from their feedback. However, Murdoch-Eaton and Sargeant's (2012) study, which explored student perceptions about receiving feedback from their instructors, found that advanced students perceived that this feedback was an opportunity to positively affect their personal development (Murdoch-Eaton & Sargeant, 2012). Thus, based on Murdoch-Eaton and Sargeant's (2012) results, it could be argued that advanced students are perhaps more focused on their own self-improvement rather than improving the instructor's performance. However, at the same time, this study found that when advanced students provided feedback to their instructors, they were not particularly motivated to make suggestions due to their previous negative experiences of seeing no changes result from their feedback. Thus, the advanced students in this study had negative impressions about the feedback process, stating that such feedback had not resulted in any change in instructor performance. This situation, in turn, provided no assistance to them in improving their own learning. Consequently, the need of advanced students to see evidence of change in order to motivate them to provide pertinent feedback means that

administrators and/or instructors must be clear in their communication to them about what changes will be made and how they will be made.

By comparison, in this study, the novice students generally indicated their willingness to provide feedback about their instructors and seemed optimistic that the feedback would be applied. The enthusiasm of novice students to provide feedback was based on their desire to see change. Specifically, because novice students are new to the university system, they could have been facing some learning challenges; consequently, they may have hoped that their feedback would help their instructors address these challenges. However, as newer students advance in this university, they may perceive that their feedback is not being used effectively by the university, and, thus, become skeptical about the value of providing feedback. In this regard, if novice students do not see changes in the behaviours of instructors, then they might become disgruntled or discouraged with the feedback process. Thus, a solution is to provide timely feedback so that students can see that their feedback has been taken seriously, and used to impact the performance of instructors. In conclusion, the qualitative and quantitative results in this study were consistent and convergent in demonstrating the effect of timely student feedback; however, the improvement based on timely student feedback appeared with novice students but not with advanced students.

Summary of the Effect of Timely Student Feedback

In summary, this study demonstrates the effectiveness of timely student feedback in measuring instructor change in performance and PBL session organization. This effect was shown for male, female, and stream one students, but not for stream two students. We can, thus, conclude that the reason change in instruction and PBL sessions may not occur is because the students asked to provide this feedback may provide less than helpful information when they do

not believe that change will occur. When students are asked to take time to provide feedback, they need to see that this information is valued, acted upon, and directly beneficial to them, or they may be reluctant to provide accurate and helpful feedback in the future.

These results were reached from embedding the qualitative results within the quantitative experimental results. The qualitative method provided insight into why change was not detected in the quantitative analyses, and it yielded insights into what could hinder or help the effectiveness of feedback, in general, and timely feedback, in particular. The qualitative findings that complemented the quantitative results were extracted from three major themes in the perceptions of instructors receiving and students providing suitable and applicable feedback on course evaluations to foster quality teaching and learning. In the next section, the three themes of the importance of student feedback, the process of student feedback, and the use of student feedback will be discussed.

Instructor and Student Perceptions about Student Feedback

Instructor Perceptions about the Importance of Student Feedback

The qualitative results from the instructors in both the control and experimental groups revealed their acknowledgement that student feedback is an essential component in helping them assess their own performance and make appropriate changes. Other instructors emphasized that students can provide insight about teaching quality that an instructor might not have considered. Brinko (1993) also came to the same conclusion in a study that examined what factors in feedback are effective in improving teaching. This result also aligns with previous research in which instructors in higher education indicated that they viewed student feedback as an important part of their professional development process (Egelandsdal & Krumsvik, 2017).

Equally important, instructors in this study identified that student feedback can also contribute to inspiring and encouraging them in their day-to-day instructional performance. While many instructors were satisfied by their weaknesses being identified so they could take steps to improve their performance, other instructors additionally appreciated students acknowledging good instructor performance. Instructors having knowledge about what needs to improve in their performance has often been identified in other studies as a critical point in justifying the use of student feedback (e.g., Darwin, 2016; Husain & Khan, 2016). Nevertheless, the results of this current study suggest that feedback is important for instructors when it also acknowledges and recognizes the beneficial aspects of their performance. Specifically, some instructors in this study indicated that receiving feedback about good performance contributed to their job satisfaction because such feedback acknowledged that students were satisfied with their performance.

In addition, most instructors in this study identified the central role that students play in the learning process by contributing towards the success of learning. As such, instructors' responses indicated that student feedback provides the bridge between student needs and effective teaching. Moreover, as students are exposed to many different instructors, these students encountered diverse teaching and communication styles, which could be confusing. To address this problem, instructors need timely feedback so that they can adjust their teaching practices to meet student needs.

Student Perceptions about the Importance of Student Feedback

In this study, students were asked about their perceptions in providing feedback to instructors. Many students indicated that they were motivated to provide feedback to improve instructor performance and teaching quality. This goal mirrors the results of previous research

and suggests that most students in higher education are indeed motivated to provide feedback that can improve instruction in the classroom (Chen & Hoshower, 2003).

However, although some students in this study believed that they were the best source to comment on the performance of instructors, they also indicated they were doubtful whether their feedback to instructors would be used. This finding is similar to that of Puska et al. (2016) who learned that students were more likely to provide honest and helpful feedback to instructors when they believed that their feedback would actually be used to improve an instructor's performance. Thus, to keep students motivated in believing that their feedback provides benefits, university administrators should assure them that their feedback is being heard and advise how their instructors will use it. Moreover, if administrators can help students deliver feedback in a timely manner so that students can see the results of their feedback, students will be motivated to provide feedback.

Instructor Perceptions about the Process of Student Feedback

Ensuring timely feedback. The instructors who took part in interviews in this study indicated that timely feedback, that is feedback taken mid-block rather than only at the end of a block, provided many benefits. For example, mid-block feedback gave instructors the opportunity to make immediate adjustments that might be required. Other researchers have also noted the importance of receiving feedback during a course because it provides instructors with the opportunity to examine changes that are needed and to implement those changes (Ward, 2016). In addition, receiving such timely feedback was also beneficial because the students who had provided it were able to see its results before the block ended. Thus, instructors indicated that feedback should be provided as quickly as possible and acted upon so that the same student could see the result of his or her feedback. Certain instructors also emphasized the importance of

receiving and giving timely feedback because when feedback is received later (i.e., after the block has ended), it may be difficult for the instructor to remember the exact situation the student might be referring to. Moreover, they noted when students are asked to provide feedback later, rather than sooner, students could also forget to provide feedback about issues they considered important at a particular moment in time. Similarly, the feedback that students provide to their instructors at block-end can help instructors monitor the improvements they have made in their performance, based on the mid-block timely feedback they received from students. Such improvements to the course will also benefit future students, and timely student feedback will help university administrators monitor instructors' overall performance, student satisfaction with the learning environment, and student evaluation of the curriculum.

Collecting student feedback.   The instructors' comments in this study provided some specific factors about collecting feedback that could improve the process of receiving it. For instance, a few instructors argued that asking students to provide verbal feedback to them directly would not meet instructor needs. These instructors believed that students would not be willing to be transparent and honest as students would be concerned about their grades if they provided negative feedback. Thus, instructors felt that written anonymous feedback was appropriate.

Another suggestion that many instructors made in this study was that student feedback should be collected online so that students could provide feedback from any location and be given enough time to provide the feedback. This observation also parallels prior research showing that instructors perceived online student feedback to be more effective in identifying academic continuous improvement needs, which ultimately helps improve the institution's learning environment (Tang, 2017). Universities may need to keep pace with technology to

effectively meet student needs. Since online evaluations would make student evaluations accessible, they would also provide students with more time to complete them, rather than being rushed to provide feedback at a set time. Online evaluations would also accommodate instructors' observations that to be fair, students should not be rushed into giving their evaluations, but should be given sufficient time to reflect on their statements. However, studies have shown that as student evaluations move from paper to online, lower response rates have typically followed (Goodman, Anson, & Belchier, 2015). To address this problem, Goodman et al. (2015) suggested using tactics to increase student response rates such as following-up frequently with students to remind them to complete the evaluation and posting announcements online and through email reminders. Thus, administrators should ensure that they are following up with and encouraging students to complete their online feedback; however, it is important that students not consider it a mandatory process, so as not to reduce their willingness to provide transparent and honest feedback.

Many instructors also explained that instructor evaluations should be specific to the instructor and to the course. Rather than using a generic evaluation for all courses, instructors in this study believed that questions specific to the course being evaluated would help students provide accurate feedback. This observation aligns with Gormally et al.'s (2014) argument that student feedback is more effective when it is specific, rather than general. The perception of instructors that evaluations should be specific to a course and an instructor is important because by creating individualized evaluations for each course and each instructor, universities might be able to encourage instructors to take the feedback they receive from students seriously and to utilize that feedback to improve their professional performance. The concern of instructors in this study about whether individualized assessments are used to collect feedback from students

seems appropriate considering that other researchers have noted that student feedback can be the best source of information about instructor performance (Pereira, Flores, Simão & Barros, 2016; Steinert, 2004). However, these researchers have also noted that other factors (e.g., timely versus delayed, oral versus written) can impact the type and quality of feedback that students provide (Pereira et al., 2016; Steinert, 2004).

Enhancing the presentation of student feedback for instructors. Another issue that was noted by the instructors was their desire to be presented with student feedback in a clearer format. For example, some instructors in this study noted that they did not want to only receive their feedback in the form of comments from students. Instead, they wanted to receive percentages, means, frequencies, and diagrams that could help them understand the feedback. This suggestion aligns with Gormally et al.'s (2014) observation that instructors want to receive feedback in meaningful ways that are useful for measuring and comparing different aspects of performance. In this regard, universities need to provide student feedback to instructors in a way that will be most meaningful to them and that will encourage them to utilize the feedback to improve their professional performance.

Supporting instructors in understanding student feedback. In this study, an instructor pointed out that receiving negative feedback from students was something that instructors should expect as a matter of course in the academic field. Yet, due to challenges that might be raised by student feedback, instructors indicated that they might not know how to professionally manage such feedback. Thus, it is important that administrators make it clear to instructors that they should not take feedback personally, but should learn how to deal with it in a professional way. The instructor's comment that negative feedback is to be expected in the academic field also points to the fact that negative feedback may not reflect the actual

performance of an instructor but may be due to factors beyond the instructor's control, including difficulty of course content or student schedules. This perception also aligns with other researchers' observations that there is a clear concern that whenever an evaluator rates a person's performance, the possibility for bias exists (Gingerich, Regehr & Eva, 2011).

Some instructors might also face individual challenges in the way they handle student feedback, especially if they receive negative feedback. For example, instructors are likely to have many questions and concerns about the feedback that they receive from students (Dekker-Groen et al., 2015). Furthermore, instructors may become upset or even worried about their jobs if they receive considerable negative feedback. Stratton et al. (1994) also found that some instructors gave higher grades as a response to student feedback being implemented. In this regard, universities must help instructors understand how to improve their professional practices and behaviours so that instruction can be improved without the need for instructors to feel as though students must be placated to give positive feedback. Additionally, instructors must receive information about how to use student feedback, as well as how to avoid immediately focusing on how to improve student feedback through less than desirable means, such as inflating grades. Thus, the focus for universities should be on assisting instructors in understanding how to utilize feedback in the short- and long-term to improve classroom practices. Even more, providing educational workshops for instructors might be a resource that can help them take the time to thoughtfully reflect on the feedback they receive, rather than developing thoughts that they will lose their jobs because of some negative comments. Otherwise, the entire process of collecting and using student feedback becomes invalid because student feedback may result in instructors giving higher grades to students, rather than instructors focusing on improving their classroom practices.

Penny and Coe (2004) explained that the use of a consultant to explain student feedback to instructors can be an effective way of addressing negative emotions on the part of instructors and increasing the likelihood that they will utilize feedback to improve instructional practices. The responses from the instructors in this study seemed to indicate that this approach is important. Consultants can help instructors because the feedback can often be contradictory, which can cause instructors to become frustrated when attempting to determine what improvements they need to make, or could even leave instructors thinking that student feedback is not important (Hulpiau et al., 2007). Therefore, it may be beneficial if university administrators assign consultants who can discuss student feedback with instructors. Moreover, some of the instructors in this study suggested that any consultant who is hired to help instructors interpret student feedback should be an expert in instructor development, particularly if the purpose of the student feedback is to help instructors improve their professional skills. However, the instructors in this study indicated that if the reason for collecting student feedback is to improve course content, then the consultant who is hired to interpret student feedback should be an expert in course content and development. Based on these comments, it is suggested that universities also conduct instructor development workshops so that instructors can be adequately prepared on how to use the information they receive from a consultant to actually improve their professional skills. In other words, although it benefits instructors to receive information on how to improve their performance, they must also be given the tools that can help them maximize the benefit of that information.

Assisting instructors in incorporating student feedback. The idea that universities should provide educational workshops to instructors was emphasized by some instructors in our study. For instance, instructors in medical school are experts in their field, either as researchers

or as clinical physicians. However, when they enter the academic field to teach students, they often lack experience in student assessments, writing course objectives, teaching skills, and so on. Thus, these instructors indicated that instructor development activities that could help them develop these skills would be beneficial. These comments align with other studies that have found that instructors can improve their teaching practice by attending specialized workshops (Steinert, 2010; Steinert et al., 2006). Moreover, the flexible timing and shorter duration that workshops afford can quickly improve teaching skills and provide the flexibility that instructors' busy schedules demand (Wilkerson & Irby, 1998).

Exposing students to the utility of feedback. One of the issues raised in previous research was that students need to be informed stakeholders about how the feedback process works and about how student feedback is used in the higher education environment (Cornell, 2014; Shah et al., 2017). Some instructors who were interviewed in this study noted that students should be aware that the usefulness of their feedback depends on how appropriate it is. Instructors also argued that changing instructor performance based on student feedback is a way to help students feel more confident about their feedback in the future. Thus, student feedback that is simply general, or only positive, or merely about the instructor's personality would not be very beneficial for the student.

Instructors also acknowledged that their students mostly complain that they do not see immediate changes based on their feedback. In this regard, students need to be informed and educated by university administrators that they are asked to provide feedback about instructors not merely as a chore to be ignored. Instead, students need to be advised that their feedback will be taken seriously and that the feedback will be used as part of the process of improving the professional performance of instructors and of the larger educational environment, and be made

apparent to students with examples. Thus, some instructors indicated that instructors should discuss the student feedback received with their students and explain what could be changed, why other aspects could not be changed, and what changes would take place in the future. Chen and Hoshower (2003), for example, suggested that instructors should highlight in the syllabus what changes have been made based on previous student feedback to let students know that their feedback is beneficial. In this regard, the students will have a sense that their feedback is being listened to and acted upon, rather than merely hearing that their feedback will be used eventually. Otherwise, students may not provide useful feedback or even have the desire to provide feedback at all.

Student Perceptions about Student Feedback Process

Ensuring student confidentiality. One of the concerns that was identified in the interviews with student participants was a fear of providing honest feedback. Some of the students were concerned that they would face retaliation by receiving lowered grades if they provided negative feedback. They also indicated that even when providing feedback that was supposed to be anonymous, they were concerned that they might be recognized as providing identifiable comments. This concern was especially likely when in small classes or in the presence of instructors or online tracking systems at the university, which they believed could identify them. Consequently, the fact that students expressed fears about providing honest feedback is an issue that must be taken seriously if it is going to be considered as an effective source of information for instructors to improve professional practices and performance.

Even more, researchers have found that as universities transition to online methods of collecting and analyzing student feedback, instructors are reluctant to embrace online student feedback systems (Debuse & Lawley, 2016; Rienties, 2014). Yet, instructor preference for

traditional paper student evaluations may further create fear in students as they wonder if their instructors will recognize their handwriting and potentially retaliate for negative feedback. If students do not provide honest feedback about their instructors due to the fear of facing retaliation, or because they think providing positive feedback will result in receiving higher grades from instructors, then the benefits from using student feedback to improve instructor performance will obviously be reduced. Thus, administrators must find ways to ensure that student feedback for paper format is also confidential, and that there is no way in which instructors can retaliate against or reward students, based on the feedback they provide. For instance, the person handing out paper feedback forms should be a third party such as course coordinators or faculty development members. The third party should also gather back the feedback forms with no involvement by the instructor. Administrators must also communicate to students how they are protecting student identities and confidentiality as part of the feedback process. In other words, administrators have to gain the trust of students if they want honest student feedback that can be taken seriously and used to improve instructor performance.

Raising student awareness about the utility of student feedback. The students who took part in this study indicated that they were not sure how their feedback would be used. In addition, some of the students explained that their feedback about instructors was influenced by the opinions and evaluations of other students. This lack of student awareness about how their feedback would be used is further evidence of the need for universities to educate students about the importance of their feedback (Cornell, 2014). Students also need to be informed about how to provide accurate feedback that is based on their own interactions and perceptions of instructors, rather than basing their feedback on the opinions of other students. Educating students about how to provide the most effective feedback can also be a way to make instructors

take student feedback more seriously, and to make student feedback a valuable source of information about instructors' performance.

Improving feedback logistics. Most of the students who took part in this study indicated that they preferred to provide feedback *during* the course. However, these students also indicated that they did not want to provide daily feedback, such as after each class session. Here, students explained that they thought they lacked sufficient information to daily evaluate a course or its instructor. Instead, the students thought that providing feedback in the middle of a course, as well as at the end of the course, would allow them to provide accurate information. These student observations are important because they suggest a specific timeframe for the ideal provision of feedback. For the students in this study, student feedback was collected once in the middle of a course and once at the end of a course.

Another issue that students shared was how student feedback is obtained. Rather than make it mandatory, they stated that it should be voluntarily offered and how (online or on paper) and when. Some of the students also explained that they would like to be notified ahead of time about the day and time when they would be asked to provide feedback so that they could prepare their thoughts. This latter point is substantiated in other research (Chen & Hoshower, 2003). These types of responses from the students suggest that they may be aware of the importance of providing feedback about instructors. Overall, it seems that students would like clarity about the feedback system process (Cornell, 2014). Thus, university administrations should take into consideration how they can integrate information about the collection of student feedback into the syllabus so that students can become aware about how frequently they are required to provide their feedback, the specific time for collecting it, and the amount of time it will take them to provide it. Allowing students adequate time to prepare for providing instructor feedback, and

allowing them the freedom to determine how and when they provide feedback may help to overcome the issue of whether students provide effective feedback about specific classes and instructors (Walsh et al., 2009). It seems that students who are focused on the feedback process and are comfortable with it may be likely to provide thoughtful, effective feedback about their instructors.

Instructor Perceptions about the Use of Student Feedback

Instructors explained that when they take action to accommodate student feedback, they categorize the changes requested into instructor performance that includes organizing the PBL sessions or PBL content. These instructors further indicated how and when student feedback could be accommodated, as well as what student feedback changes could not be implemented in a timely manner. In their interviews, most instructors agreed that student feedback about instructor performance that was received in a timely manner was considered easy to adopt. Indeed, researchers have found that student feedback will improve teaching performance if delivered as soon as possible after the teaching (Brinko, 1993; Gormally et al., 2014). However, if the changes requested are related to the content of the course or to PBL scenarios, it is out of the instructors' hands to make such changes, even if they have received such requests promptly. This confirms Archer's (2010) observation that student feedback received in a timely manner is helpful for procedural skills, while complex tasks such as changes to the course content and reformulating course objectives needs more time. Thus, students need to be educated about the changes that can be expected to occur more promptly, such as improving teaching skills or changes to the organization of PBL, and that changes to actual course content must be approved at the university-level, rather than by an individual instructor. Therefore, to receive optimal results from student feedback, academic administrators in universities should base the timing of

obtaining student feedback on what type of instructor evaluation they require, as well as the impact desired from the student feedback.

The Faculty Development Unit Role in the Timely Student Feedback Process

Based on discussing the perceptions of instructors and students about the importance, process, and the use of student feedback, university administrations should provide a faculty development unit with responsibility for the student feedback process and delivering it in a timely manner to instructors. The faculty development unit should also aim to design faculty development programs, revise them, and evaluate them to meet the needs of the university, the students, and the faculty in light of a university's vision and mission. More specifically, the faculty development unit should be responsible for quality control of the student feedback process and for ensuring that essential programs are available to students and instructors. Such activities would include providing mandatory specific workshops or information sessions for students and instructors about topics such as an orientation to the student feedback process, the purpose and use of student feedback, and the types of quality feedback. This information could help create appropriate expectations for students that feedback will be applied and inform instructors that support for applying feedback will be provided. Instructors should also be introduced to what kind of faculty development activities can be provided to help them and how they can communicate with the consultants when needed.

Other programs that the faculty development unit should provide can be more flexible based on the particular needs of instructors or centered around consultant recommendations. Specifically, consultants could guide instructors to appropriate faculty development activities and workshops that could assist them in improving their instructional practices. Such consultants could also help in designing the type and method of faculty development activities that would be

needed and to evaluate their effect, based on instructors' change in performance as noted through either student feedback or instructors themselves.

Recommendations for Research

For researchers, the importance of students seeing results from their feedback suggests many ideas for future research. For example, researchers could investigate the amount of time that universities take from collecting student feedback to actually implementing changes based on that feedback. Additionally, researchers could investigate the impact of students seeing rapid changes from their timely feedback to determine how or if students' longer-term perceptions about the feedback process changes as they progress from novice to advanced university students.

Another recommendation for researchers would be to utilize mixed methods to investigate the student feedback process. This method is rare, particularly in research involving medical education (Kornegay et al., 2017). However, a comprehensive discussion of findings is possible when mixed methods are used (Schifferdecker & Reed, 2009). Specifically, our results were enriched because the qualitative responses to the interviews helped explain the quantitative results. Also, perceptions were quantified on rating scales and directly compared over time and across groups, using quantitative data, which would not have been possible with qualitative data.

It is also recommended that researchers focus more attention on the systematic process of student feedback. Collecting, analyzing, and using student feedback should be a step-by-step process involving students, instructors, and even consultants (Safavi et al., 2013). In this regard, researchers should investigate how universities carry out the entire process of student feedback and how that process affects the impact of student feedback. Investigating how universities collect student feedback, how they present the feedback to instructors, and how they assist

instructors in using the feedback to make changes to their performance and organization in the classroom would provide useful information about why students and instructors hold certain perceptions and attitudes about the feedback process. Thus, by examining the entire student feedback process, researchers might also be able to better determine how student feedback is used, and why student feedback does not always bring about the results that students desire to see from their efforts in evaluating their instructors.

Limitations of the Study

This study examined gender differences between male and female students who were taught by instructors of their same gender. It is recommended that future studies investigate the effect of timely student feedback on students being taught by instructors of the opposite gender, as the type of feedback and its impact may differ. Another limitation was the bias existing in convenience sampling. The present sample was chosen because of its accessibility, and, thus, it was not randomly selected and may not represent other Saudi Arabian medical colleges. The sample included first year medical students from one medical school at KSAU-HS in Saudi Arabia. To generalize the study results, future data sets should include randomly selected medical students from different academic years. Although the medical school at KSAU-HS, is similar to other medical schools in Saudi Arabian universities, which also follow a similar system of student feedback, generalization to other medical schools in Saudi Arabia or other Gulf countries cannot be assumed.

Strengths of the Study

The strength of this study was that mixed methods were used to collect and analyze data from both students and instructors. This approach made it possible to understand student

feedback from several perspectives (Kruidering-Hall et al., 2009; Ludvigsen et al., 2015). The collection of both qualitative and quantitative data allowed for broad issues to be examined, and then for the individual perspectives of students and instructors to be discussed (De Beer & Mårtensson, 2015; Kamp et al., 2013). Rather than only understanding that advanced students seemed to hold more negative perceptions about giving feedback about instructors, or that gender differences existed between male and female students regarding how they provided feedback, the use of qualitative and quantitative data made it possible to understand why those differences existed among the participants in this study (Salamonson et al., 2015; Zumbrunn, Marrs & Mewborn, 2016).

Other researchers have also found the use of mixed methods to be helpful in investigating the ability of student feedback to bring together different types of data to understand relationships between variables (Ahlborg et al., 2015; Egelandsdal & Krumsvik, 2017). The capability to understand differences in perceptions about student feedback and to hear the desire of students to see results from their feedback would not have been possible without the use of mixed methods in this study.

Conclusion

Timely student feedback was found to be an important factor that affects teaching quality and contributes to faculty professional development. The study also emphasized that student feedback is a complex process with many factors that can impact student feedback in general, and timely student feedback in particular. The study showed that in order for the student feedback process to be successful, administrators, instructors, and students must first of all be knowledgeable about the student feedback process and aware of how student feedback will be used to improve the learning environment for students. Moreover, administrators must consider

all of the potential factors that could impact the student feedback process such as students'

requirement for confidentiality and their need to see results from their feedback. Consequently,

student feedback should be delivered in a timely manner to instructors who need to clearly

understand the feedback they receive. As such, instructors may require assistance in how to

appropriately apply feedback. Therefore, as the results from the study indicated, a faculty

development unit could facilitate the process of student feedback to ensure its effectiveness.

This unit could help instructors navigate through the changes they may need to undertake by

ensuring that relevant workshops and other faculty development activities are readily available

for instructors. It could also ensure that all stakeholders in the feedback process be educated

about the purpose and use of student feedback. Moreover, to receive the most benefit from the

use of student feedback data, administrators must be sensitive to understanding how gender can

affect interpretation of the student feedback results and that novice and advanced students may

have different levels of willingness to provide relevant feedback, based on their feedback

experiences and interests.

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Appendix A1, Visual Model of the Study Process
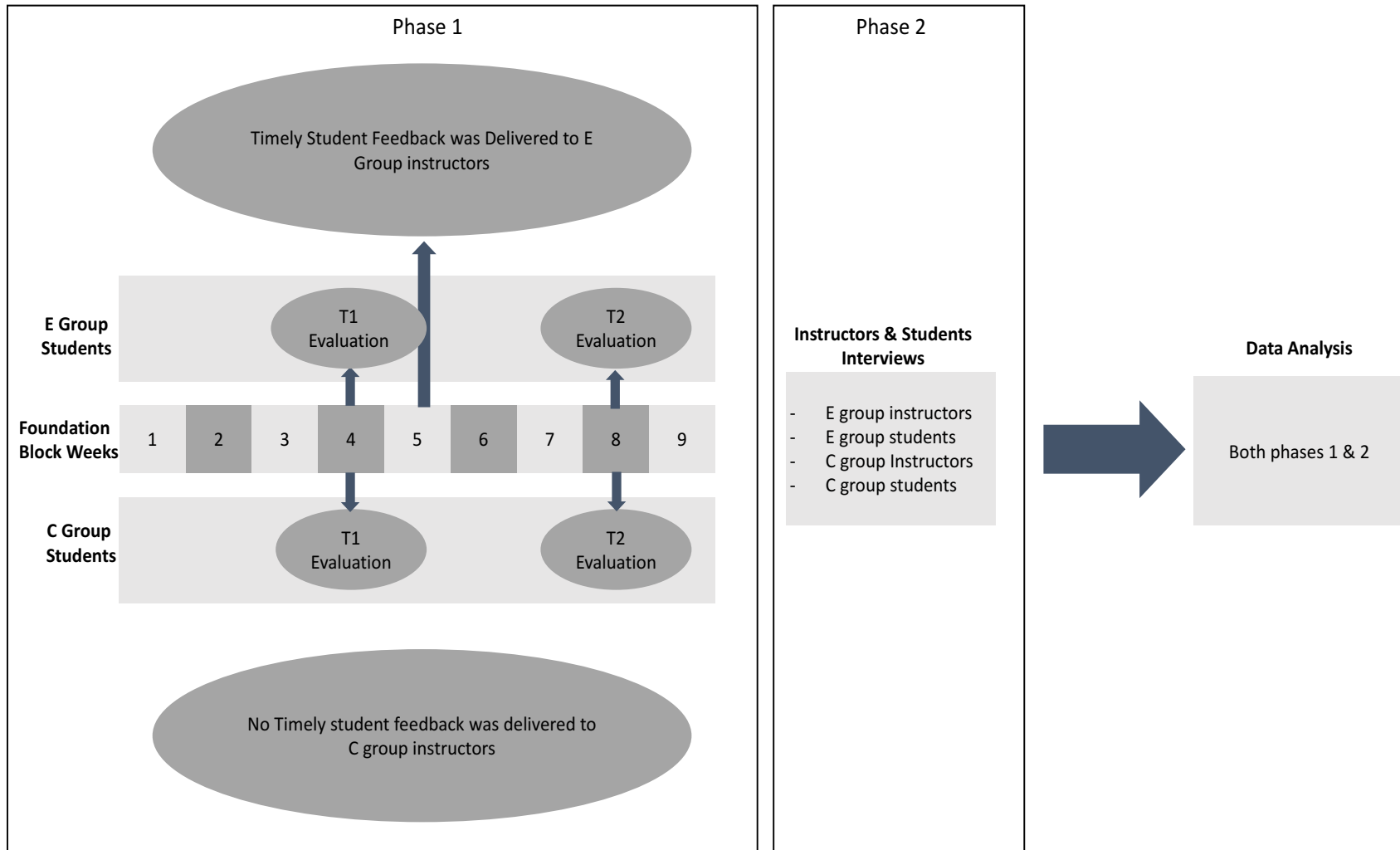
Figure 1: Visual Model of the Study Process

Appendix A2: Student Questionnaire

Student Questionnaire

Student Name:_____ **Week No:**_____

Instructor Name: _____ **Date:** _____

When thinking about the PBL sessions you are attending, please circle the number that best describes how you feel about each of the following statements. Please provide any additional comments in the space provided on the next page under "Additional Comments".

1=Strongly Disagree   2= Disagree   3=Undecided   4=Agree   5=Strongly Agree

A. Instructor's Performance	Rating
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	1 2 3 4 5
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	1 2 3 4 5
3. Cooperation with students: Instructor provided support and guidance to me when needed.	1 2 3 4 5
4. The instructor was able to effectively deliver the content.	1 2 3 4 5
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	1 2 3 4 5
6. The instructor gave students opportunities to interact with him/her.	1 2 3 4 5
7. The instructor provided me with feedback.	1 2 3 4 5
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	1 2 3 4 5
9. The instructor appropriately facilitated the brainstorming sessions.	1 2 3 4 5
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	1 2 3 4 5
11. The instructor appropriately facilitated the reporting sessions.	1 2 3 4 5
12. The instructor effectively handled time management.	1 2 3 4 5
13. The instructor helped to keep the group focused on its task.	1 2 3 4 5
14. The instructor provided well balanced intervention.	1 2 3 4 5
B. PBL Session Organization	Rating
1. The PBL objectives were always clear.	1 2 3 4 5
2. The content of the PBL sessions met the objectives.	1 2 3 4 5
3. The content of the PBL sessions met my learning needs.	1 2 3 4 5
4. The PBL sessions were lead in a clear manner.	1 2 3 4 5

5. The block learning materials met my learning needs.	1 2 3 4 5
6. The PBL sessions stayed on the assigned schedule.	1 2 3 4 5

Please briefly note below what you liked best about your instructor's performance:

1).

2).

3).

Please briefly note below anything you would like to see changed in the PBL session organization or content for future classes in this subject:

1).

2).

3).

Additional Comments:

_____
_____
_____
_____
_____
_____

Thank you for your feedback.

Appendix A3: Interview Guide for Instructors and Students (E & C) groups

Interview Guide for Instructors and Students (Control & Experimental groups)

The language used in the interviews is English and will be conducted by the researcher. The researcher will first greet the interviewee, then introduce himself and explain the purpose of the study as well as the importance of his or her participation, and express appreciation for his or her cooperation. The researcher will guide the interview using the following questions:

Instructors of Experimental Group:

1. Briefly describe your professional background - specifically the courses you teach.
2. Have you received feedback while teaching the foundation studies block?
3. Have you made any changes based on student feedback? If no why? If yes, what?
4. What do you suggest as an effective method for delivering feedback?
5. What environmental or organizational settings, or other factors would you feel enabled or hindered feedback implementation?
6. What perspectives and experiences do you think should be brought to the feedback process and implementation?
7. What advice would you have for organizations implementing feedback from students in a timely manner?
8. Was the timeline for receiving feedback long enough for you to implement any suggested or required changes?
9. Describe the benefits you received as a result of receiving timely feedback?
10. When is students' feedback valuable and easy to implement in comparison to your students' feedback in this study?
11. Explain the contribution of student feedback to faculty development.
12. To what extent did the content of the feedback items cover all your interests and requirements about students' feedback?
13. To what extent you think feedback delivered in a timely manner from students is important?
14. How would you characterize the strengths and weaknesses of receiving feedback in a timely manner by students?
15. Would you be open to being contacted again to clarify statements you have made, or to discuss other issues with respect to this interview?

Instructors of Control Group:

1. Briefly describe your professional background - specifically the courses you teach.
2. Do you think if you had received feedback in a timely manner from students, you would have been able to adapt and change? If yes how?
3. Have you made any changes to the course?
4. To what extent do you feel students' feedback is valuable in enhancing teaching performance?
5. To what extent do you think receiving student feedback in a timely manner is important?
6. What perspectives and experiences do you think should be brought to the feedback process and implementation?
7. What advice do you have for organizations implementing student feedback in a timely manner?
8. What environmental or organizational settings, or other factors would you feel enabled or hindered feedback implementation?
9. How would you characterize the strengths and weaknesses of receiving student feedback in a timely manner?
10. Would you be open to being contacted again to clarify statements you have made or to discuss other issues with respect to this interview?

Student Interview Questions:

1. In your opinion, what is the purpose of student feedback to instructors?
2. Do you feel you can be completely honest without any fear of reprisal or of giving disrespect when you provide feedback of an instructor?
3. Do you take evaluations of instructors seriously?
4. Do you think there are barriers for implementing student feedback? Please specify.
5. Do you recommend having continuous evaluation of your instructors during your study, or do you think that student evaluations completed at the end of each course are good enough?
6. Have you given any feedback to an instructor before and during your current study?
7. Have you noticed any changes in any of your instructors based on your feedback?
8. Could you specify any factors that might affect your evaluation of an instructor?
9. What will encourage you to provide effective feedback to your instructor?
10. To what extent do you think student feedback is beneficial in enhancing instructor performance, and student learning, and what benefits might be reflected back to the students?
11. Would you be open to being contacted again to clarify statements you have made or discuss other issues with respect to this interview?

Appendix A4: Students' Consent Form

Department of Community Health Sciences
Medical Education
Telephone: ████████████2
Email:████████████████████

Research Project Title: Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach
Principal Investigator: Dr. Tanya Beran
Co-Investigators: Dr. Elizabeth Oddone Paolucci, Abdulaziz AlHassan

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information. You will receive a copy of this form.

BACKGROUND
Students' feedback to instructors is considered important in enhancing faculty development. I am undertaking a study to measure the effect of student feedback in general and timely feedback in particular on quality of teaching, and faculty development in Saudi Arabian universities.

WHAT IS THE PURPOSE OF THE STUDY?
In this study, the aim is to improve instructors and students' understanding of what effective feedback is and how to implement it. The goal is to gather recommendations from both instructors and students to increase awareness about the importance of feedback for quality teaching and faculty development.

IF I PARTICIPATE, WHAT WOULD I HAVE TO DO?
You will be asked to fill out a questionnaire to evaluate your instructors who are leading the Problem-based Learning (PBL) sessions for foundation studies block. Some students will be asked to take part in an interview after the end of the foundation studies block. The interviews will be conducted in the meeting room of the College of Medicine. Each interview will take approximately 15 to 20 minutes and will include open-ended questions. The interview transcript will be sent to the participants within a week after the interview date for review and approval. Your confidentiality will be protected. A sample interview question is "To what extent do you think student feedback is beneficial in enhancing instructor performance, and student learning, and what benefits might be reflected back to the students?"

WHAT ARE THE RISKS?
There are no risks to participation in this study. Your confidentiality will be protected.

DO I HAVE TO PARTICIPATE?
Your participation in this research study is completely voluntary. If you choose not to participate in the study there will be no recrimination, and neither instructors nor the university administration will be informed about it.

WHAT ELSE DOES MY PARTICIPATION INVOLVE?
Any comments you provide in the questionnaire or in the interview will be useful for future quality improvement initiatives to do with student evaluation of teaching and faculty development.

WHAT WILL I BENEFIT FROM PARTICIPATING IN THE STUDY?

Ethics ID: REB15-1782
Study Title: Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach
PI: Dr. Tanya Beran
Version number/date: version 3/Jul 08 2016
Page expressed as 1 of 2

You will be participating in a study that will attempt to identify how timely feedback from student evaluations of instructors can lead to quality teaching and learning.

WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY ANYTHING FOR PARTICIPATION IN THE STUDY?
You will not receive any incentive for your participation in the study, and there will be no payment for participation.

WILL MY RECORDS BE KEPT PRIVATE?
The data will be gathered and processed in such a way as to ensure participants' confidentially. Your name, and contact information will only be used for the purpose of contacting you about the research. Each participant's name is recorded on the questionnaire to match your responses. Your questionnaire results and interview data will only be used for research purposes. Only Study Identification Numbers will be used for data analysis, and results will be presented in an aggregated format that will not identify any person. Signed consent forms, completed questionnaires, and interview data will be kept in a locked filing cabinet at the researcher's personal office for five years after completion of the research, and will then be destroyed. The results may be submitted for publication in scientific journals. No identifying features of any individual will be included in such reports.

SIGNATURES
Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. You are free to withdraw from the study at any time. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout the study.

If you have any questions concerning your rights as a possible participant in this research, please contact:

Dr. Tanya Beran: T███████████████   Email: ████████████████
Dr. Elizabeth Oddone Paolucci: T███████████   Email: ████████████████
Abdulaziz AlHassan: ████████████████   Email ████████████████

If you have any questions concerning your rights as a possible participant in this research, or research in general, please contact the Chair of the Conjoint Health Research Ethics Board, University of Calgary at (403) 220-7990.
Please indicate if you agree to participate in the following:

Participate in completing questionnaires.	I give permission I do not give permission	☐ ☐
I consent to be contacted for a possible interview.	I give permission I do not give permission	☐ ☐
Provide contact information and contacted directly to arrange for an interview.	I give permission I do not give permission	☐ ☐
Tape recorder during the interview session if you participated. (Tape records will be used for the research only and kept in a secure location).	I give permission I do not give permission	☐ ☐

_____   _____
Student Name
                                    Email
_____   _____   _____
Phone Number (Optional)   Signature   Date

Ethics ID: REB15-1782
Study Title: Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach
PI: Dr. Tanya Beran
Version number/date: version 3/Jul 08 2016
Page expressed as 2 of 2

Appendix A5: Instructors' Consent Form

Department of Community Health Sciences
Medical Education
Telephone: ███████████
Email: A████████████@█████████

Research Project Title: Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach
Principal Investigator: Dr. Tanya Beran.
Co-Investigators: Dr. Elizabeth Oddone Paolucci, Abdulaziz AlHassan

This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, please ask. Please take the time to read this carefully to understand any accompanying information. You will receive a copy of this form.

BACKGROUND

Students' feedback to instructors is considered important in enhancing faculty development. We are undertaking a study to measure the effect of student feedback in general and of timely feedback in particular on the quality of teaching and faculty development in Saudi Arabian universities. This will be conducted through distributing a questionnaire to first year medical students to evaluate their instructors who are leading the Problem-based Learning (PBL) sessions of the foundation studies block, some of the students and instructors will also be asked to participate in an interview after the end of the foundation studies block.

WHAT IS THE PURPOSE OF THE STUDY?

In this study, the aim is to improve instructors and students' understanding of what effective feedback is and how to implement it. The goal is to gather recommendations from both instructors and students to increase awareness about the importance of feedback for quality teaching and faculty development.

IF I PARTICIPATE, WHAT WILL I HAVE TO DO?

You will be asked to participate in an interview with open-ended questions after the end of the foundation studies block. The interviews will be conducted in the meeting room of the College of Medicine. Each interview will take approximately 15 to 20 minutes. Your interview transcript will be sent to you within a week after the interview date for your review and approval. Your confidentiality will be protected. A sample interview question is, "To what extent do you think receiving student feedback in a timely manner is important?"

WHAT ARE THE RISKS?

There are no risks to participation in this study. Your confidentiality will be protected.

DO I HAVE TO PARTICIPATE?

Your participation in this study is completely voluntary. If you choose not to participate in the study there will be no recrimination, and the university administration will not be informed about it.

WHAT ELSE DOES MY PARTICIPATION INVOLVE?

Any comments you provide regarding the research in the interview will be useful for future quality improvement initiatives to do with student evaluation of teaching and faculty development.

HOW WILL I BENEFIT FROM PARTICIPATING IN THE STUDY?

You will be participating in a study that will attempt to identify how timely feedback from student evaluations of instructors can lead to quality teaching and learning.

WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY ANYTHING FOR PARTICIPATION IN THE STUDY?
You will not receive any type of incentive for your participation in the study, and there will be no payment for participation.

WILL MY RECORDS BE KEPT PRIVATE?
The data will be gathered and processed in such a way as to ensure participants' confidentially. Your name, contact information, questionnaire results, and interview data will only be used for research purposes. Signed consent forms, and completed interview data will be kept in a locked filing cabinet at the researcher's personal office for five years after completion of the research, and will then be destroyed. The results may be submitted for publication in scientific journals. No identifying features of any individual will be included in such reports.

SIGNATURES
Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. You are free to withdraw from the study at any time. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout the study.

If you have any questions concerning your rights as a possible participant in this research, please contact:
  Dr. Tanya Beran: T███████████████   Email: t█████████████████
  Dr. Elizabeth Oddone Paolucci: T█████████████████████   Email █████████████████
  Abdulaziz AlHassan: ████████████████   Email ████████████████████████████

If you have any questions concerning your rights as a possible participant in this research, or research in general, please contact the Chair of the Conjoint Health Research Ethics Board, University of Calgary ████████████████████

Please indicate if you agree to participate by placing a checkmark in the following boxes:

I consent to be contacted for a possible interview.	I give permission ☐ I do not give permission ☐
Provide contact information and agree to be contacted directly to arrange for an interview.	I give permission ☐ I do not give permission ☐
To be recorded during the interview session if you are selected. (Tape recordings will be used for the research only and kept in a secure location).	I give permission ☐ I do not give permission ☐

_____   _____
Participant Name   Email

_____
Phone Number (Optional)

_____   _____
Signature   Date

Ethics ID: REB15-1782
Study Title: Student Evaluations and the Effect of Timely Feedback on Course Quality and Faculty Development in Saudi Arabia: A Mixed Methods Approach
PI: Dr. Tanya Beran
Version number/date: version 3/Jul 08 2016
Page expressed as 2 of 2

Appendix A6: Structured Feedback Form

Instructor name: _____   **Week No:** Five

Block: Foundation studies   **Date:** _ / _ / 2016

Number of student responses: _ Students   **Batch:** 13

Batch 13 students in Foundation Block have been asked to evaluate their PBL instructors in their performance and the organization of the PBL sessions. This structured feedback shows how many students rated each item in a rating scale from strongly disagree to strongly agree along with summary of their comments on the two open ended questions.

A. Instructor's performance	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.					
2.Quality of planning: Instructor made the classes interesting enough to hold my attention.					
3.Cooperation with students: Instructor provided support and guidance to me when needed.					
4.The instructor was able to effectively deliver the content.					
5.The instructor showed enthusiasm when leading the Problem- Based Learning (PBL) sessions.					
6.The instructor gave students opportunities to interact with him/her.					
7. The instructor provided me with feedback.					
8. The instructor's feedback was valuable in showing me how I might improve in the Block.					
9. The instructor appropriately facilitated the brainstorming sessions.					
10. The instructor appropriately facilitated the hypothesis reorganization sessions.					
11.The instructor appropriately facilitated the reporting sessions.					
12. The instructor effectively handled time management.					

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
13. The instructor helped to keep the group focused on its task.					
14. The instructor provided well balanced intervention.					
B. PBL session organization	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.The PBL objectives were always clear.					
2.The content of the PBL sessions met the objectives.					
3.The content of the PBL sessions met my learning needs.					
4.The PBL sessions were lead in a clear manner.					
5.The block learning materials met my learning needs.					
6.The PBL sessions stayed on the assigned schedule.					

Summary of what students liked the best about instructor performance:

    1.

    2.

    3.

Summary of things student would like to see changed in the in the PBL session organization or content for future classes in this subject:

    1.

    2.

    3.

Summary for students additional comments:

_____

_____

_____

_____

Appendix A7: Debriefing Form

Debriefing Form for Participating in a Study
University of Calgary

Thank you for your participation in the study. Your participation is highly appreciated.

Purpose of the Study:

Earlier in the consent form we informed you that the purpose of the study is to measure the effect of student feedback in general and of timely feedback in particular on the quality of teaching and faculty development in Saudi Arabian universities. More particularly, the goal is to gather recommendations from both instructors and students to help increase awareness about the importance of feedback for quality teaching and faculty development. The goal is also to improve instructors and students' understanding of what effective feedback is, and how to implement it.

Procedure:

The study was conducted by distributing a questionnaire to first year medical students to evaluate their instructors who are leading the Problem-Based Learning (PBL) sessions in the foundation studies block. Some of the students and instructors were also asked to participate in an interview after the end of the foundation studies block.

Participants for the study were 329 first year medical students, and their instructors who are leading PBL sessions at the King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) College of Medicine's main campus in Riyadh.

Students are divided into either an experimental or a control group. Only first student questionnaires from the experimental group were analyzed and the results of these questionnaires were presented to instructors from the experimental group as students' feedback during the week of mid exam week. Any other student evaluations will be analyzed when the researcher returns to Calgary, but no feedback will be presented to any instructor.

The researcher will compare between the first student evaluation results and the second student evaluation for each group. The researcher will also compare the experimental group evaluation results and the control group evaluation results to test whether instructors who received the student feedback in a timely manner made any changes to their teaching quality. Those results will be also compared to with students evaluation for the instructors who did not receive any feedback.

Unfortunately, we could not provide you with all of the details prior to your participation in order to accurately test our hypothesis. This procedure was to insure that your actions were spontaneous and not influenced by prior knowledge about the purpose of the study.

Thank you again for your participation.

Appendix A8, Visual Model of Qualitative Data Analysis Adapted from (Creswell, 2013)

Initially reading through text	Divide the text into segments of information	Label segments with codes	Reduce redundancy of codes	Collapse codes into themes
Many pages of text	Many segments of text	30 – 40 codes	Reduce codes	Codes further reduced 3 to 5 themes
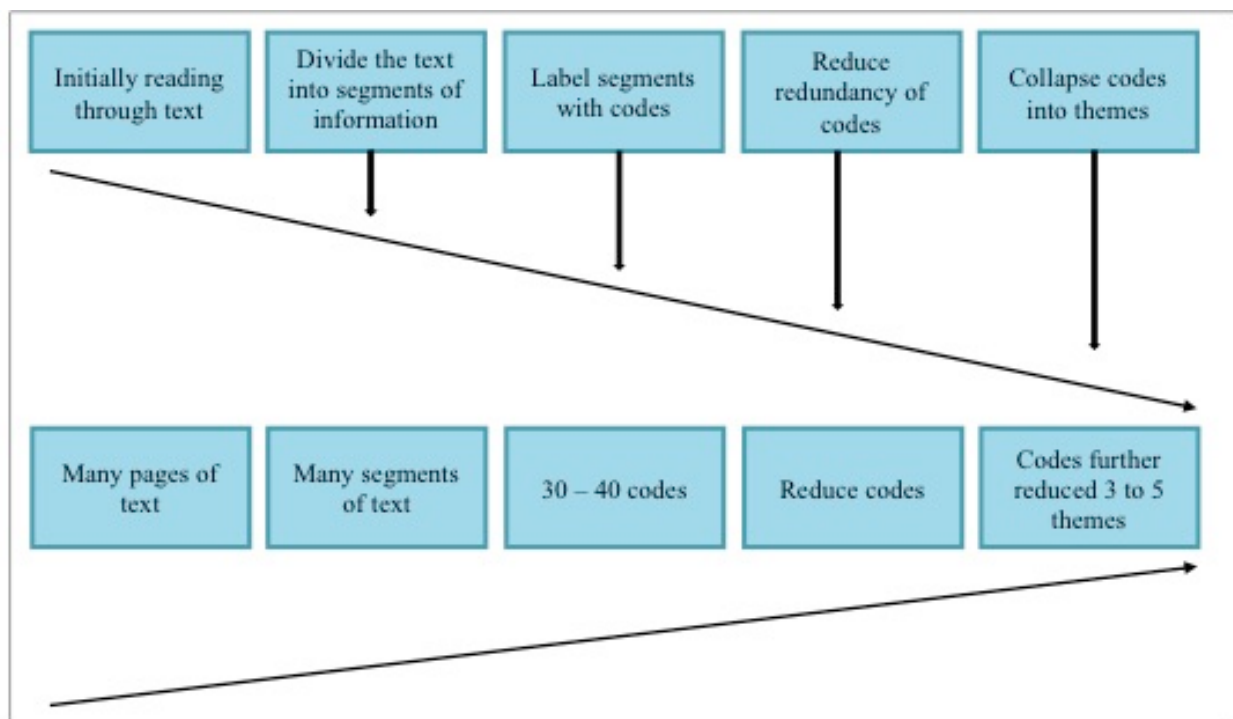
Figure 2: Visual Model of Qualitative Data Analysis Adapted from (Creswell, 2013)

Appendix B1: Male Students (E$_M$ and C$_M$ Groups): Student Rating Means for T$_1$ and T$_2$

A. Instructor's Performance	E$_M$ (T$_1$)			E$_M$ (T$_2$)			C$_M$ (T$_1$)			C$_M$ (T$_2$)			Diff T$_2$-T$_1$	
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	E$_M$	C$_M$
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	103	4.02	1.07	106	4.32	0.86	104	4.22	0.95	109	4.36	0.82	0.30	0.14
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	103	4.36	0.89	106	4.63	0.68	106	4.35	0.96	109	4.46	0.88	0.27	0.11
3. Cooperation with students: Instructor provided support and guidance to me when needed.	103	4.50	0.74	106	4.73	0.62	106	4.51	0.88	109	4.56	0.75	0.23	0.05
4. The instructor was able to effectively deliver the content.	103	4.42	0.85	105	4.69	0.65	106	4.45	0.73	109	4.56	0.76	0.27	0.11
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	103	4.24	0.94	106	4.53	0.79	106	4.23	1.02	109	4.37	0.93	0.29	0.14
6. The instructor gave students opportunities to interact with him/her.	103	4.31	1.02	105	4.65	0.76	106	4.60	0.71	109	4.69	0.54	0.34	0.09
7. The instructor provided me with feedback.	100	3.98	1.16	105	4.41	0.88	106	4.06	1.10	109	4.19	1.02	0.43	0.13
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	103	3.90	1.16	106	4.33	0.98	106	3.87	1.11	108	4.05	1.11	0.43	0.18
9. The instructor appropriately facilitated the brainstorming sessions.	102	4.18	0.88	106	4.59	0.58	106	4.33	0.88	109	4.41	0.77	0.41	0.08
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	103	4.12	0.95	106	4.57	0.66	105	4.25	0.90	109	4.50	0.66	0.45	0.25
11. The instructor appropriately facilitated the reporting sessions.	103	4.11	0.95	106	4.53	0.65	105	4.28	0.84	108	4.34	0.86	0.42	0.06
12. The instructor effectively handled time management.	102	4.46	0.78	106	4.69	0.69	105	4.25	0.94	109	4.29	0.93	0.23	0.04
13. The instructor helped to keep the group focused on its task.	103	4.43	0.85	105	4.74	0.52	106	4.42	0.85	109	4.49	0.80	0.31	0.07
14. The instructor provided well balanced intervention.	102	4.23	1.00	106	4.61	0.66	106	4.31	0.88	109	4.48	0.79	0.38	0.17
A. From A1 to A14	103	4.23	0.67	106	4.57	0.47	106	4.29	0.59	109	4.41	0.57	0.34	0.12
B. PBL Session Organization														
1. The PBL objectives were always clear.	103	3.91	1.08	106	4.34	0.86	106	3.75	1.10	109	3.75	1.06	0.43	0.00
2. The content of the PBL sessions met the objectives.	103	4.03	1.06	106	4.43	0.82	106	4.12	0.90	109	4.09	0.92	0.40	-0.03
3. The content of the PBL sessions met my learning needs.	103	3.97	1.08	106	4.20	1.02	106	3.85	1.20	109	3.83	1.11	0.23	-0.02
4. The PBL sessions were lead in a clear manner.	103	4.21	0.94	106	4.47	0.77	106	4.19	0.97	109	4.07	0.96	0.26	-0.12
5. The block learning materials met my learning needs.	102	3.53	1.10	106	3.90	1.29	106	3.52	1.18	108	3.58	1.14	0.37	0.06
6. The PBL sessions stayed on the assigned schedule.	102	4.34	0.98	106	4.57	0.88	106	4.43	0.77	108	4.40	0.77	0.23	-0.03
B. From B1 to B6	103	4.00	0.76	106	4.32	0.72	106	3.98	0.76	109	3.95	0.74	0.32	-0.03
A and B. From A1 to B6	103	4.16	0.61	106	4.49	0.44	106	4.20	0.55	109	4.27	0.54	0.33	0.07

Note. Diff = Difference in the mean between T$_2$ and T$_1$

Appendix B2: Female Students (E_F and C_F Groups): Student Rating Means for T_1 and T_2

A. Instructor's Performance	E_F (T_1)			E_F (T_2)			C_F (T_1)			C_F (T_2)			Diff T_2-T_1	
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	E_F	C_F
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	48	4.35	0.84	47	4.66	0.70	47	4.34	0.87	45	4.76	0.48	0.31	0.42
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	48	4.17	1.06	47	4.32	0.96	46	4.43	0.86	45	4.44	0.84	0.15	0.01
3. Cooperation with students: Instructor provided support and guidance to me when needed.	48	4.40	0.89	47	4.66	0.81	47	4.57	0.62	45	4.64	0.64	0.26	0.07
4. The instructor was able to effectively deliver the content.	48	4.31	1.09	47	4.62	0.82	47	4.51	0.78	45	4.58	0.69	0.31	0.07
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	48	4.33	0.91	47	4.55	0.83	48	4.27	0.94	45	4.56	0.81	0.22	0.29
6. The instructor gave students opportunities to interact with him/her.	48	4.65	0.63	46	4.67	0.79	47	4.64	0.64	45	4.76	0.48	0.02	0.12
7. The instructor provided me with feedback.	48	4.25	0.96	46	4.57	0.83	48	4.44	0.87	45	4.64	0.57	0.32	0.20
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	47	4.06	1.07	46	4.50	0.89	48	4.33	0.95	45	4.51	0.81	0.44	0.18
9. The instructor appropriately facilitated the brainstorming sessions.	48	4.50	0.65	46	4.63	0.68	48	4.52	0.80	45	4.67	0.56	0.13	0.15
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	48	4.46	0.77	47	4.64	0.70	48	4.50	0.71	45	4.64	0.61	0.18	0.14
11. The instructor appropriately facilitated the reporting sessions.	47	4.36	0.84	47	4.60	0.74	47	4.49	0.72	45	4.58	0.75	0.24	0.09
12. The instructor effectively handled time management.	47	4.53	0.69	46	4.59	0.88	48	4.50	0.71	45	4.56	0.72	0.06	0.06
13. The instructor helped to keep the group focused on its task.	48	4.58	0.74	47	4.55	0.77	48	4.58	0.61	45	4.58	0.66	-0.03	0.00
14. The instructor provided well balanced intervention.	48	4.38	0.81	47	4.51	1.00	48	4.50	0.80	45	4.56	0.75	0.13	0.06
A. From A1 to A14	48	4.38	0.61	47	4.57	0.66	48	4.47	0.61	45	4.60	0.53	0.19	0.13
B. PBL Session Organization														
1. The PBL objectives were always clear.	48	3.71	1.17	47	4.13	1.10	48	4.02	0.91	45	3.82	1.07	0.42	-0.20
2. The content of the PBL sessions met the objectives.	48	4.15	0.92	47	4.40	0.82	48	4.31	0.75	45	4.38	0.83	0.25	0.07
3. The content of the PBL sessions met my learning needs.	48	4.00	1.18	47	4.26	1.07	48	4.00	0.99	45	4.11	1.05	0.26	0.11
4. The PBL sessions were lead in a clear manner.	48	4.17	0.91	47	4.40	0.97	48	4.13	0.96	45	4.40	0.86	0.23	0.27
5. The block learning materials met my learning needs.	48	3.85	1.11	47	3.96	1.08	48	3.73	1.05	45	3.76	1.11	0.11	0.03
6. The PBL sessions stayed on the assigned schedule.	48	4.60	0.79	47	4.60	0.71	48	4.42	0.79	45	4.67	0.60	0.00	0.25
B. From B1 to B6	48	4.08	0.75	47	4.29	0.83	48	4.10	0.68	45	4.19	0.74	0.21	0.09
A and B. From A1 to B6	48	4.29	0.61	47	4.49	0.65	48	4.36	0.58	45	4.48	0.56	0.20	0.12

Note. Diff = Difference in the mean between T_2 and T_1

Appendix B3: S1 Students (E_{S1} and C_{S1} Groups): Student Rating Means for T_1 and T_2

A. Instructor's Performance	E_{S1} (T_1)			E_{S1} (T_2)			C_{S1} (T_1)			C_{S1} (T_2)			Diff T_2-T_1	
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	E_{S1}	C_{S1}
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	122	4.08	1.02	127	4.41	0.85	132	4.25	0.94	135	4.44	0.78	0.33	0.19
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	122	4.34	0.93	127	4.61	0.68	134	4.39	0.90	135	4.43	0.89	0.27	0.04
3. Cooperation with students: Instructor provided support and guidance to me when needed.	122	4.54	0.72	127	4.79	0.56	134	4.54	0.81	135	4.56	0.74	0.25	0.02
4. The instructor was able to effectively deliver the content.	122	4.43	0.87	126	4.75	0.59	135	4.46	0.74	135	4.55	0.75	0.32	0.09
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	122	4.26	0.92	127	4.55	0.77	135	4.20	1.02	135	4.37	0.93	0.29	0.17
6. The instructor gave students opportunities to interact with him/her.	122	4.40	0.96	126	4.67	0.74	134	4.60	0.69	135	4.70	0.53	0.27	0.10
7. The instructor provided me with feedback.	121	4.08	1.12	126	4.48	0.85	135	4.13	1.08	135	4.30	0.96	0.40	0.17
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	121	4.00	1.16	126	4.40	0.94	135	3.97	1.12	134	4.16	1.08	0.40	0.19
9. The instructor appropriately facilitated the brainstorming sessions.	121	4.30	0.84	127	4.65	0.57	135	4.36	0.87	135	4.46	0.73	0.35	0.10
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	122	4.29	0.93	127	4.61	0.66	134	4.30	0.86	135	4.52	0.64	0.32	0.22
11. The instructor appropriately facilitated the reporting sessions.	121	4.24	0.91	127	4.57	0.65	134	4.33	0.79	134	4.37	0.85	0.33	0.04
12. The instructor effectively handled time management.	120	4.53	0.74	127	4.72	0.66	134	4.31	0.90	135	4.35	0.89	0.19	0.04
13. The instructor helped to keep the group focused on its task.	122	4.56	0.80	126	4.73	0.54	135	4.46	0.80	135	4.49	0.75	0.17	0.03
14. The instructor provided well balanced intervention.	121	4.32	0.96	127	4.66	0.62	135	4.34	0.87	135	4.49	0.79	0.34	0.15
A. From A1 to A14	122	4.31	0.66	127	4.61	0.46	135	4.33	0.59	135	4.44	0.56	0.30	0.11
B. PBL Session Organization														
1. The PBL objectives were always clear.	122	3.89	1.09	127	4.30	0.88	135	3.86	1.04	135	3.76	1.05	0.41	-0.10
2. The content of the PBL sessions met the objectives.	122	4.10	1.03	127	4.43	0.82	135	4.18	0.87	135	4.16	0.90	0.33	-0.02
3. The content of the PBL sessions met my learning needs.	122	4.01	1.10	127	4.20	1.06	135	3.90	1.15	135	3.93	1.07	0.19	0.03
4. The PBL sessions were lead in a clear manner.	122	4.21	0.92	127	4.46	0.83	135	4.16	0.98	135	4.14	0.94	0.25	-0.02
5. The block learning materials met my learning needs.	121	3.65	1.15	127	3.85	1.28	135	3.58	1.15	134	3.67	1.05	0.20	0.09
6. The PBL sessions stayed on the assigned schedule.	121	4.41	0.97	127	4.57	0.88	135	4.44	0.78	134	4.46	0.74	0.16	0.02
B. From B1 to B6	122	4.05	0.76	127	4.30	0.75	135	4.02	0.74	135	4.02	0.72	0.25	0.00
A and B. From A1 to B6	122	4.23	0.61	127	4.52	0.45	135	4.24	0.55	135	4.31	0.54	0.29	0.07

Note. Diff = Difference in the mean between T_2 and T_1

Appendix B4: S1 Students (E_{S2} and C_{S2} Groups): Student Rating Means for T_1 and T_2

A. Instructor's Performance	E_{S2} (T_1)			E_{S2} (T_2)			C_{S2} (T_1)			C_{S2} (T_2)			Diff T_2-T_1	
	N	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	E_{S2}	C_{S2}
1. Accessibility: Instructor was easy to reach either by visiting his/her office, or by phone, or via email.	29	4.31	0.97	26	4.50	0.71	19	4.32	0.82	19	4.74	0.56	0.19	0.42
2. Quality of planning: Instructor made the classes/sessions interesting enough to hold my attention.	29	4.10	1.01	26	4.19	1.13	18	4.28	1.13	19	4.63	0.68	0.09	0.35
3. Cooperation with students: Instructor provided support and guidance to me when needed.	29	4.17	1.00	26	4.31	1.05	19	4.47	0.77	19	4.74	0.56	0.14	0.27
4. The instructor was able to effectively deliver the content.	29	4.17	1.14	26	4.27	1.04	18	4.56	0.78	19	4.68	0.67	0.10	0.12
5. The instructor showed enthusiasm when leading the Problem-Based Learning (PBL) sessions.	29	4.31	0.97	26	4.46	0.95	19	4.53	0.70	19	4.79	0.53	0.15	0.26
6. The instructor gave students opportunities to interact with him/her.	29	4.48	0.78	25	4.56	0.92	19	4.68	0.67	19	4.74	0.45	0.08	0.06
7. The instructor provided me with feedback.	27	4.00	1.04	25	4.36	0.99	19	4.47	0.70	19	4.53	0.70	0.36	0.06
8. The instructor's feedback was valuable in showing me how I might improve in the Block.	29	3.76	0.99	26	4.27	1.04	19	4.32	0.88	19	4.37	0.83	0.51	0.05
9. The instructor appropriately facilitated the brainstorming sessions.	29	4.21	0.77	25	4.36	0.76	19	4.58	0.77	19	4.68	0.67	0.15	0.10
10. The instructor appropriately facilitated the hypothesis reorganization sessions.	29	3.97	0.78	26	4.50	0.76	19	4.53	0.77	19	4.68	0.67	0.53	0.15
11. The instructor appropriately facilitated the reporting sessions.	29	3.97	0.94	26	4.42	0.81	18	4.44	0.92	19	4.68	0.67	0.45	0.24
12. The instructor effectively handled time management.	29	4.31	0.76	25	4.36	1.07	19	4.42	0.77	19	4.53	0.77	0.05	0.11
13. The instructor helped to keep the group focused on its task.	29	4.14	0.79	26	4.46	0.86	19	4.58	0.69	19	4.68	0.82	0.32	0.10
14. The instructor provided well balanced intervention.	29	4.07	0.88	26	4.19	1.23	19	4.58	0.69	19	4.58	0.69	0.12	0.00
A. From A1 to A14	29	4.14	0.62	26	4.36	0.80	19	4.47	0.64	19	4.65	0.57	0.22	0.18
B. PBL Session Organization														
1. The PBL objectives were always clear.	29	3.69	1.17	26	4.15	1.19	19	3.63	1.16	19	3.84	1.17	0.46	0.21
2. The content of the PBL sessions met the objectives.	29	3.93	0.96	26	4.42	0.81	19	4.21	0.79	19	4.32	0.95	0.49	0.11
3. The content of the PBL sessions met my learning needs.	29	3.86	1.16	26	4.27	0.87	19	3.89	1.05	19	3.79	1.32	0.41	-0.10
4. The PBL sessions were lead in a clear manner.	29	4.14	0.95	26	4.38	0.85	19	4.21	0.85	19	4.37	0.95	0.24	0.16
5. The block learning materials met my learning needs.	29	3.55	0.95	26	4.23	0.91	19	3.63	1.12	19	3.37	1.57	0.68	-0.26
6. The PBL sessions stayed on the assigned schedule.	29	4.48	0.74	26	4.58	0.58	19	4.37	0.76	19	4.63	0.68	0.10	0.26
B. From B1 to B6	29	3.94	0.72	26	4.34	0.74	19	3.99	0.75	19	4.05	0.93	0.40	0.06
A and B. From A1 to B6	29	4.08	0.61	26	4.35	0.74	19	4.33	0.61	19	4.47	0.62	0.27	0.14

Note. Diff = Difference in the mean between T_2 and T_1

Appendix B5: Correlations among instructor's performance and PBL session organization items

		A1	A2	A3	A4	A5	A6	A9	A10	A11	A12	A13	A14	B1	B2	B3	B4
Correlation	A1	1.000	.372	.308	.367	.366	.340	.382	.351	.368	.261	.315	.327	.130	.174	.054	.217
	A2	.372	1.000	.590	.675	.599	.375	.544	.541	.521	.407	.544	.528	.292	.245	.267	.248
	A3	.308	.590	1.000	.645	.532	.384	.417	.516	.532	.389	.450	.527	.347	.295	.300	.311
	A4	.367	.675	.645	1.000	.523	.366	.569	.576	.571	.420	.550	.560	.287	.236	.286	.194
	A5	.366	.599	.532	.523	1.000	.465	.538	.498	.476	.368	.353	.477	.252	.207	.211	.256
	A6	.340	.375	.384	.366	.465	1.000	.419	.409	.396	.374	.416	.485	.190	.215	.181	.174
	A9	.382	.544	.417	.569	.538	.419	1.000	.678	.582	.442	.460	.559	.313	.285	.273	.294
	A10	.351	.541	.516	.576	.498	.409	.678	1.000	.722	.404	.530	.662	.338	.354	.273	.272
	A11	.368	.521	.532	.571	.476	.396	.582	.722	1.000	.431	.501	.585	.333	.322	.252	.274
	A12	.261	.407	.389	.420	.368	.374	.442	.404	.431	1.000	.560	.503	.260	.260	.246	.238
	A13	.315	.544	.450	.550	.353	.416	.460	.530	.501	.560	1.000	.636	.227	.301	.241	.182
	A14	.327	.528	.527	.560	.477	.485	.559	.662	.585	.503	.636	1.000	.310	.283	.294	.278
	B1	.130	.292	.347	.287	.252	.190	.313	.338	.333	.260	.227	.310	1.000	.601	.482	.513
	B2	.174	.245	.295	.236	.207	.215	.285	.354	.322	.260	.301	.283	.601	1.000	.581	.491
	B3	.054	.267	.300	.286	.211	.181	.273	.273	.252	.246	.241	.294	.482	.581	1.000	.543
	B5	.217	.248	.311	.194	.256	.174	.294	.272	.274	.238	.182	.278	.513	.491	.543	1.000
	A1		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.014	.001	.177	.000
	A2	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	A3	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	A4	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	A5	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	A6	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.001	.000	.001	.001
	A9	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	A10	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	A11	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	A12	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	A13	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.001
	A14	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	B1	.014	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000		.000	.000	.000
	B2	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	B3	.177	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000		.000
	B5	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.001	.000	.000	.000	.000	

Appendix B6: Responses to Two Open-Ended Questions (All Students)

Total number of responses 1382

E group				C group			
Q1: Number of responses T_1= 259 (19%), T_2= 234 (17%) Number of words: T_1= 1253, T_2= 1090 **Q2**: Number of responses T_1= 126 (9%), T_2= 87 (6%) Number of words: T_1= 1150, T_2= 704 **Q3**: Number of responses T_1= 5 (0.4%), T_2= 11 (1%) Number of words: T_1= 58, T_2= 233 Total responses T_1 = 390 (28%), T_2 = 332 (24%)				**Q1**: Number of responses T_1= 242 (17%), T_2= 205 (15%) Number of words: T_1= 1330, T_2= 1008 **Q2**: Number of responses T_1= 98 (7%), T_2= 107 (8%) Number of words: T_1= 858, T_2= 834 **Q3**: Number of responses T_1= 4 (0.3%), T_2= 4 (0.3%) Number of words: T_1= 84, T_2= 66 Total responses T_1 = 344 (24.3%), T_2 = 316 (23.3%)			
Themes		**Sub-themes**		**Themes**		**Sub-themes**	
T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*
General comments		Instructor's personality		General comments		Instructor's personality	
		23, (2%)	*26, (2%)*			*26, (2%)*	*20, (1%)*
96, (7%)	*82, (6%)*	Instructor's overall performance		*64, (5%)*	*60, (4%)*	Instructor's overall performance	
		73, (5%)	*56, (4%)*			*38, (3%)*	*40, (3%)*
Instructors' specific performance		Feedback to the student		Instructors' specific performance		Feedback to the student	
		18, (1%)	*13, (1%)*			*19, (1%)*	*15, (1%)*
166, (12%)	*156, (11%)*	Communication with the student		*179, (13%)*	*147, (11%)*	Communication with the student	
		30, (2%)	*26, (2%)*			*31, (2%)*	*23, (2%)*
		Student management				Student management	
		36, (3%)	*47, (3%)*			*32, (2%)*	*33, (2%)*
		Time management skills				Time management skills	
		14, (1%)	*15, (1%)*			*10, (1%)*	*11, (1%)*
		Teaching skills				Teaching skills	
		44, (3%)	*34, (2%)*			*66, (5%)*	*39, (3%)*
		Professional experience				Professional experience	
		24, (2%)	*21, (2%)*			*21, (2%)*	*26, (2%)*
Course organization (Improving)		Improving schedule		Course organization (Improving)		Improving schedule	
		36, (3%)	*33, (3%)*			*30, (2%)*	*47, (3%)*
		Improving logistics				Improving logistics	
87, (6%)	*67, (5%)*	*17, (1%)*	*18, (1%)*	*67, (5%)*	*82, (6%)*	*15, (1%)*	*12, (1%)*
		Improving PBL cases				Improving PBL cases	
		34, (2%)	*16, (1%)*			*22, (2%)*	*23, (2%)*
Instructor's related tasks		Improving the instructor's role		Instructor's related tasks		Improving the instructor's role	
		36, (3%)	*23, (2%)*			*30, (2%)*	*21, (1%)*
41, (3%)	*27, (2%)*	Providing feedback		*34, (2%)*	*27, (1%)*	Providing feedback	
		5, (0.3%)	*4, (0.3%)*			*4, (0.3%)*	*6, (0.4%)*

Note; Q1= First open ended question, Q2= Second open ended question

Appendix B7: Responses to Two Open-Ended Questions (Male Students)

Total number of responses 899							
E$_M$ group				**C$_M$ group**			
Q1: Number of responses T$_1$= 158 (18%), T$_2$= 151 (17%) Number of words: T$_1$= 761, T$_2$= 758 **Q2**: Number of responses T$_1$= 74 (8%), T$_2$= 61 (7%) Number of words: T$_1$= 633, T$_2$= 467 **Q3**: Number of responses T$_1$= 5 (1%), T$_2$= 8 (1%) Number of words: T$_1$= 58, T$_2$= 117 Total responses T$_1$ = 237 (26%), T$_2$ = 220 (25%)				**Q1**: Number of responses T$_1$= 157 (17%), T$_2$= 144 (16%) Number of words: T$_1$= 330, T$_2$= 732 **Q2**: Number of responses T$_1$= 56 (6%), T$_2$= 78(9%) Number of words: T$_1$= 473, T$_2$= 543 **Q3**: Number of responses T$_1$= 4 (0.4%), T$_2$= 3 (0.4%) Number of words: T$_1$= 84, T$_2$= 52 Total responses T$_1$ = 217 (24%), T$_2$ = 225 (25%)			
Themes		**Sub-themes**		**Themes**		**Sub-themes**	
T$_1$ *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*
General comments		Instructor's personality		General comments		Instructor's personality	
		7, (1%)	*14, (1%)*			*11, (1%)*	*9, (1%)*
46, (5%)	*44, (5%)*	Instructor's overall performance		*22, (3%)*	*30, (3%)*	Instructor's overall performance	
		39, (4%)	*31, (3%)*			*11, (1%)*	*21, (2%)*
Instructors' specific performance		Feedback to the student		Instructors' specific performance		Feedback to the student	
		8, (1%)	*8, (1%)*			*9, (1%)*	*9, (1%)*
114, (12%)	*111, (12%)*	Communication with the student		*136, (15%)*	*115, (13%)*	Communication with the student	
		20, (2%)	*17, (2%)*			*29, (3%)*	*19, (2%)*
		Student management				Student management	
		28, (3%)	*33, (4%)*			*17, (2%)*	*22, (2%)*
		Time management skills				Time management skills	
		12, (1%)	*10, (1%)*			*8, (1%)*	*10, (1%)*
		Teaching skills				Teaching skills	
		26, (3%)	*27, (3%)*			*54, (6%)*	*30, (3%)*
		Professional experience				Professional experience	
		20, (2%)	*16, (2%)*			*19, (2%)*	*25, (3%)*
Course organization (Improving)		Improving schedule		Course organization (Improving)		Improving schedule	
		26, (3%)	*27, (3%)*			*16, (2%)*	*35, (4%)*
		Improving logistics				Improving logistics	
57, (6%)	*49, (6%)*	*10, (1%)*	*8, (1%)*	*41, (5%)*	*62, (7%)*	*9, (1%)*	*10, (1%)*
		Improving PBL cases				Improving PBL cases	
		21, (2%)	*14, (1%)*			*16, (2%)*	*17, (2%)*
Instructor's related tasks		Improving the instructor's role		Instructor's related tasks		Improving the Instructor's role	
		18, (2%)	*15, (2%)*			*16, (2%)*	*16, (2%)*
20, (2%)	*16, (2%)*	Providing feedback		*18, (2%)*	*18, (2%)*	Providing feedback	
		2, (0.2%)	*1, (0.1%)*			*2, (0.2%)*	*2, (0.2%)*

Note; Q1= First open ended question, Q2= Second open ended question

Appendix B8: Responses to Two Open-Ended Questions (Female Students)

Total number of response 483

E group				C group			

Q1: Number of responses T_1= 99 (20%), T_2= 79 (16%)
   Number of words: T_1= 390, T_2= 331
Q2: Number of responses T_1= 53 (11%), T_2= 26 (5%)
   Number of words: T_1= 519, T_2= 237
Q3: Number of responses T_1= 0 (0%), T_2= 3 (1%)
   Number of words: T_1= 0, T_2= 116
Total responses T_1= 152 (31%), T_2= 108 (22%)
				Q1: Number of responses T_1= 83 (17%), T_2= 69 (14%)
				   Number of words: T_1= 414, T_2= 280
				Q2: Number of responses T_1= 42 (9%), T_2= 28 (6%)
				   Number of words: T_1= 385, T_2= 298
				Q3: Number of responses T_1= 0, T_2= 1
				   Number of words: T_1= 0, T_2= 14
				Total responses T_1= 125 (26%), T_2= 98 (20%)			

Themes		**Sub-themes**		**Themes**		**Sub-themes**	
T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*	T_1 *Comments Number, (%)*	T_2 *Comments Number, (%)*
General comments *49, (10%)*	*37, (8%)*	Instructor's personality *16, (3%)* Instructor's overall performance *33, (7%)*	*12, (3%)* *25, (5%)*	General comments *41, (8%)*	*35, (7%)*	Instructor's personality *15, (3%)* Instructor's overall performance *26, (5%)*	*11, (2%)* *18, (4%)*
Instructors' specific performance *50, (11%)*	*42, (9%)*	Feedback to the student *10, (2%)* Communication with the student *9, (2%)* Student management *8, (2%)* Time management skills *2, (0.2%)* Teaching skills *18, (4%)* Professional experience *4, (1%)*	*5, (1%)* *9, (2%)* *11, (2%)* *5, (1%)* *7, (1%)* *5, (1%)*	Instructors' specific performance *42, (9%)*	*34, (7%)*	Feedback to the student *10, (2%)* Communication with the student *2, (2%)* Student management *14, (3%)* Time management skills *2, (0.4%)* Teaching skills *12, (2%)* Professional experience *2, (0.4%)*	*6, (1%)* *4, (1%)* *12, (3%)* *1, (0.2%)* *10, (2%)* *1, (0.2%)*
Course organization (Improving) *31, (6%)*	*19, (4%)*	Improving schedule *10, (2%)* Improving logistics *8, (2%)* Improving PBL cases *13, (3%)*	*6, (1%)* *10, (2%)* *3, (1%)*	Course organization (Improving) *26, (5%)*	*21, (4%)*	Improving schedule *14, (3%)* Improving Logistics *6, (1%)* Improving PBL cases *6, (1%)*	*13, (3%)* *2, (0.4%)* *6, (1%)*
Instructor's related tasks *22, (5%)*	*10, (2%)*	Improving the instructor's role *19, (4%)* Providing feedback *3, (1%)*	*7, (1%)* *3, (1%)*	Instructor's related tasks *16, (3%)*	*8, (2%)*	Improving the instructor's role *14, (3%)* Providing feedback *2, (0.4%)*	*6, (1%)* *2, (0.4%)*

Note; Q1= First open ended question, Q2= Second open ended question

Appendix B9: Responses to Two Open-Ended Questions (S1 Students)

Total number of response 1231							
E group				**C group**			

Q1: Number of responses T$_1$= 217 (18%), T$_2$= 210 (17%)
    Number of words: T$_1$= 1122, T$_2$= 988
Q2: Number of responses T$_1$= 106 (7%), T$_2$= 78 (6%)
    Number of words: T$_1$= 945, T$_2$= 630
Q3: Number of responses T$_1$= 5 (0.4%), T$_2$= 8 (1%)
    Number of words: T$_1$= 58, T$_2$= 117
Total responses: T$_1$= 328 (27%), T$_2$= 296 (24%)
				Q1: Number of responses T$_1$= 225 (21%), T$_2$= 195 (16%)
				    Number of words: T$_1$= 1273, T$_2$= 950
				Q2: Number of responses T$_1$= 85 (7%), T$_2$= 94 (8%)
				    Number of words: T$_1$= 747, T$_2$= 725
				Q3: Number of responses T$_1$= 4 (0.3%), T$_2$= 4 (0.3%)
				    Number of words: T$_1$= 84, T$_2$= 66
				Total responses: T$_1$= 314 (25%), T$_2$= 293 (24%)			

Themes		**Sub-themes**		**Themes**		**Sub-themes**	
T$_1$ *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*	**T$_1$** *Comments Number, (%)*	**T$_2$** *Comments Number, (%)*
General comments		Instructor's personality		General Comments		Instructor's personality	
		16, (1%)	*23, (2%)*			*23, (2%)*	*18, (1%)*
74, (6%)	*75, (6%)*	Instructor's overall performance		*57, (5%)*	*56, (5%)*	Instructor's overall performance	
		58, (5%)	*52, (4%)*			*34, (3%)*	*38, (3%)*
Instructors' specific performance		Feedback to the student		Instructors' specific performance		Feedback to the student	
		16, (1%)	*12, (1%)*			*19, (2%)*	*15, (1%)*
146, (12%)	*139, (11%)*	Communication with the student		*169, (14%)*	*141, (11%)*	Communication with the student	
		23, (2%)	*22, (2%)*			*30, (2%)*	*22, (2%)*
		Student management				Student management	
		32, (3%)	*42, (3%)*			*29, (2%)*	*32, (3%)*
		Time management skills				Time management skills	
		12, (1%)	*12, (1%)*			*9, (1%)*	*10, (1%)*
		Teaching skills				Teaching skills	
		43, (3%)	*33, (3%)*			*64, (5%)*	*38, (3%)*
		Professional experience				Professional experience	
		20, (2%)	*18, (1%)*			*18, (2%)*	*24, (2%)*
Course organization (Improving)		Improving schedule		Course Organization (Improving)		Improving schedule	
		35, (3%)	*31, (3%)*			*25, (2%)*	*40, (3%)*
		Improving logistics				Improving logistics	
75. (6%)	*57, (5%)*	*12, (1%)*	*13, (1%)*	*58, (5%)*	*73, (6%)*	*15, (1%)*	*12, (1%)*
		Improving PBL cases				Improving PBL cases	
		28, (2%)	*13, (1%)*			*18, (1%)*	*21, (2%)*
Instructor's related tasks		Improving the instructor's role		Instructor's related tasks		Improving the instructor's role	
		31 (3%)	*21, (2%)*			*26, (2%)*	*21, (2%)*
33, (3%)	*25, (2%)*	Providing feedback		*30, (2%)*	*23, (2%)*	Providing feedback	
		2, (0.2%)	*4, (0.3%)*			*4, (0.3%)*	*2, (0.2%)*

Note; Q1= First open ended question, Q2= Second open ended question

Appendix B10: Responses to Two Open-Ended Questions (S2 Students)

Total number of response 151

E Group	C Group

Q1: Number of responses T_1= 42 (28%), T_2= 24 (16%)
    Number of words: T_1= 724, T_2= 102
Q2: Number of responses T_1= 20 (13%), T_2= 9 (6%)
    Number of words: T_1= 204, T_2= 74
Q3: Number of responses T_1= 0, T_2= 3 (2%)
    Number of words: T_1= 0, T_2= 116
Total responses: T_1= 62 (41%), T_2= 36 (24%)
	Q1: Number of responses T_1= 17 (11%), T_2= 12 (8%)
	    Number of words: T_1= 57, T_2= 58
	Q2: Number of response s T_1= 13 (9%), T_2= 11 (7%)
	    Number of words: T_1= 111, T_2= 109
	Q3: Number of responses T_1= 0, T_2= 0
	    Number of words: T_1= 0, T_2= 0
	Total responses: T_1= 30 (20%), T_2= 23 (15%)

Themes (E)		Sub-themes (E)		Themes (C)		Sub-themes (C)	
T_1 Comments Number, (%)	T_2 Comments Number, (%)	T_1 Comments Number, (%)	T_2 Comments Number, (%)	T_1 Comments Number, (%)	T_2 Comments Number, (%)	T_1 Comments Number, (%)	T_2 Comments Number, (%)
General comments		Instructor's personality		**General Comments**		Instructor's personality	
		7, (5%)	3, (2%)			3, (2%)	3, (2%)
22, (15%)	8, (5%)	Instructor's overall performance		7, (5%)	6, (4%)	Instructor's overall performance	
		15, (10%)	5, (3%)			4, (3%)	3, (2%)
Instructors' specific performance		Feedback to the student		**Instructors' specific performance**		Feedback to the student	
		2, (1%)	1, (1%)			0, (0%)	0, (0%)
20, (13%)	16, (11%)	Communication with the Student		10, (7%)	6, (4%)	Communication with the student	
		7, (5%)	3, (2%)			1, (1%)	1, (1%)
		Student management				Student management	
		4, (3%)	5, (3%)			3, (2%)	1, (5%)
		Time management skills				Time management skills	
		2, (1%)	3, (2%)			1, (1%)	1, (1%)
		Teaching skills				Teaching skills	
		1, (1%)	1, (1%)			2, (1%)	1, (1%)
		Professional experience				Professional experience	
		4, (3%)	3, (2%)			3, (2%)	2, (1%)
Course organization (Improving)		Improving schedule		**Course Organization (Improving)**		Improving schedule	
		1, (1%)	2, (1%)			5, (3%)	7, (5%)
		Improving logistics				Improving logistics	
12, (8%)	10, (7%)	5, (3%)	5, (3%)	9, (6%)	9, (6%)	0, (0%)	0, (0%)
		Improving PBL cases				Improving PBL Cases	
		6, (4%)	3, (2%)			4, (3%)	2, (1%)
Instructor's related tasks		Improving the instructor's role		**Instructor's related tasks**		Improving the instructor's role	
		5, (3%)	2, (1%)			4, (3%)	0, (0%)
8, (5%)	2, (1%)	Providing feedback		4, (3%)	2, (1%)	Providing feedback	
		3, (2%)	0, (0%)			0, (0%)	2, (1%)

Note; Q1= First open ended question, Q2= Second open ended question

Appendix B11: Qualitative Sample Size

Gender	Students		Instructors	
	E Group	C Group	E Group	C Group
Male	22	20	5	5
Female	11	8	2	1
Total	33	28	7	6

Appendix B12: Summary of Instructors' Qualitative Results

Themes	Sub-themes
The importance of student feedback	a) Instructors view student feedback as an important tool in the instructors' professional development as educators b) Instructors view student feedback as essential in meeting student learning needs
The process of student feedback	a) Ensuring timely feedback b) Collecting student feedback c) Enhancing the presentation of student feedback for instructors d) Supporting instructors in understanding student feedback e) Assisting instructors in incorporating student feedback f) Exposing students to the utility of feedback
The use of student feedback	Instructors explained that some student feedback could be easily accommodated, while other requests for changes could not be

Appendix B13: Summary of Students' Qualitative Results

Themes	Sub-themes
The importance of student feedback	a) Students view student feedback as important for instructor professional development b) Student feedback is Imperative for improving student learning
The process of student feedback	a) Ensuring student confidentiality b) Raising student awareness about the utility of student feedback c) Improving feedback logistics
The use of student feedback	Students want to see results from their feedback and it is being used properly. In which, student expressed that they want to see change in instructor performance about the way of teaching and improving the learning environment