# THE INFLUENCE OF ONLINE SUPERVISION VIA VIDEOCONFERENCING ON POSTGRADUATE STUDENTS' PROBLEM UNDERSTANDING AND REFLECTIVE LEARNING FOR BETTER ENGAGEMENT

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**UNIVERSITI SAINS MALAYSIA**

**2021**

# THE INFLUENCE OF ONLINE SUPERVISION VIA VIDEOCONFERENCING ON POSTGRADUATE STUDENTS' PROBLEM UNDERSTANDING AND REFLECTIVE LEARNING FOR BETTER ENGAGEMENT

**by**

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**Thesis submitted in fulfilment of the requirements**
**for the degree of**
**Doctor of Philosophy**

**June 2021**

## ACKNOWLEDGEMENT

Alhamdulillah, all praise is to Allah. As a student in Universiti Sains Malaysia (USM), and to be a PhD degree holder from the Center for Instructional Technology and Multimedia, I would like to express my sincere and deepest gratitude, appreciation and great thankfulness to my supervisor Professor Dr. Irfan Naufal Umar for his encouragement and great support all the way since the first day. His guidance and dedicated time had inspired me to gain confidence in achieving the objective of this degree. Without his efforts, guidelines, support, strong advice this journey would never end. To my Co-supervisor Dr. Mariam Binti Mohamad, no words would able my gratitude for your guidance.

My warmest feeling is addressed to my beloved parents, Mr. Nasser Saleh and Ms. Jamla Mubarak for their unlimited support, prayers, and understandings. To my wife Najla Ghanim Aldaraani, thank you for always be there when I needed you the most. Also, no words could be able to show my gratitude to my dear friends, those who are by my side during the hardest moments in this PhD journey: Abdulrahman Aldarami, Fahad Alenezi, and Obaid Alshammari.

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## LIST OF ABBREVIATIONS

| | |
|---|---|
| AVE | Average Variance Extracted |
| ENG | Engagement |
| GOF | Goodness of Fit |
| HDX | Higher Definition Experience |
| ICT | Information and Communication Technology |
| IQR | Interquartile Range |
| KSU | King Saud University |
| PC | Perceived Control |
| PD | Professional Development |
| PF | Perceived Functionality |
| PFB | Perceived Functional Benefits |
| PI | Perceived Interaction |
| PLS | Partial Least Square |
| PU | Problem Understanding |
| RL | Reflective Learning |
| SEM | Structural Equation Modeling |
| TDT | Transactional Distance Theory |
| TTF | Task Technology Fit |
| ZPD | Zone of Proximal Development |

**PENGARUH PENYELIAAN SECARA DALAM TALIAN MELALUI SIDANG VIDEO TERHADAP PEMAHAMAN MASALAH DAN PEMBELAJARAN REFLEKTIF UNTUK MENINGKATKAN KETERLIBATAN PELAJAR IJAZAH TINGGI**

## ABSTRAK

Sidang video telah menjadi alat penting dalam bidang pendidikan hari ini. Dengan bantuan sidang video, pendidikan dapat disediakan kepada semua orang di serata dunia. Teknologi ini membantu merapatkan jurang antara pelajar dan penyelia yang berada di lokasi geografi yang berbeza. Alatan sidang video turut digunakan di Arab Saudi dan dianggap sebagai kelengkapan penting dalam pendidikan jarak jauh yang ditawarkan di sana tetapi setelah sekian lama, para pelajar masih menghadapi kesukaran apabila berkomunikasi dengan penyelia. Hal ini disebabkan kurangnya interaksi dan proses penyertaan yang sepatutnya dalam sektor pendidikan. Maka, matlamat utama penyelidikan ini adalah untuk meneliti pengaruh penyeliaan dalam talian melalui sidang video terhadap pemahaman masalah pelajar dan pembelajaran reflektif bagi keterlibatan yang lebih baik. Bagi tujuan ini, penyelidikan ini menyasarkan objektif berikut: 1) untuk mentaksir pengaruh penyeliaan dalam talian melalui sidang video dari segi persepsi fleksibiliti, interaksi, manfaat fungsian dan kawalan terhadap pemahaman masalah dan pembelajaran reflektif dalam kalangan para pelajar lepasan ijazah; 2) untuk menilai pengaruh pengalaman peribadi dari segi pembelajaran reflektif dan pemahaman masalah pelajar terhadap keterlibatan mereka dalam sesi penyeliaan dalam talian; dan 3) untuk memahami persepsi pelajar universiti tentang penggunaan alatan sidang video bagi tujuan penyeliaan. Pendekatan kaedah bercampur digunakan dalam kajian ini yang melibatkan kaedah tinjauan secara

dalam talian menggunakan satu soal selidik. Sejumlah 252 orang pelajar ijazah tinggi daripada tiga kolej di Universiti Raja Saud telah terlibat dalam kajian ini. Kaedah kuantitatif digunakan untuk menganalisis maklum balas mereka terhadap soal selidik tersebut. Di samping itu, bagi bahagian kualitatif, temu bual separa berstruktur telah dijalankan terhadap 15 orang pelajar lepasan ijazah yang dipilih, di mana analisis data berdasarkan kaedah tematik telah digunakan. Analisis data yang diperoleh daripada 252 orang responden menggunakan PLS menyokong hipotesis di mana persepsi interaksi, manfaat fungsian dan kawalan didapati menunjukkan pengaruh yang positif terhadap pemahaman masalah dan pembelajaran reflektif pelajar semasa penyeliaan dalam talian menggunakan sidang video. Walaupun persepsi manfaat fungsian didapati mempengaruhi pembelajaran reflektif pelajar secara positif, tetapi dapatan sedemikian tidak berlaku bagi pemahaman masalah. Dapatan-dapatan tersebut telah mengesahkan keberkesanan sidang video dalam menggalakkan pembelajaran dan pemahaman permasalahan penyelidikan pelajar. Sementara itu, bagi analisis kualitatif melalui sesi temubual, dapatan telah mengenal pasti empat tema iaitu manfaat fungsian, kemudahan & komunikasi, fleksibiliti, dan penetapan matlamat penyelidikan. Responden yang ditemu ramah menekankan bahawa walaupun alat persidangan video menjimatkan masa dan usaha mereka, kos yang tinggi dan capaian internet yang perlahan merupakan kekangan dalam sesi penyeliaan dalam talian. Dapatan kajian ini menunjukkan peranan penting telesidang video yang akan menggalakkan penggunaan mod penyeliaan secara jarak jauh ini di Universiti Raja Saud dan seterusnya di peringkat Kementerian Pendidikan Tinggi. Penggunaan mod penyeliaan dalam talian ini akan memberi manfaat dalam meningkatkan kualiti pembelajaran jarak jauh khususnya bagi pelajar-pelajar di kawasan terpencil.

**THE INFLUENCE OF ONLINE SUPERVISION VIA VIDEOCONFERENCING ON POSTGRADUATE STUDENTS' PROBLEM UNDERSTANDING AND REFLECTIVE LEARNING FOR BETTER ENGAGEMENT**

## ABSTRACT

Video conferencing has become an important tool in education. With the help of video conferencing, education can be provided to everyone all over the globe. This technology helps to bridge the gap between students and supervisors present in different geographical places. Video conferencing tool is also being used in Saudi Arabia and is considered to be vital part of distance education being provided in the country but even after all these years, the students are having difficulties while communicating with their supervisors. This is also because of lack of proper interaction and participation process present in the education sector. Therefore, the main aim of this research is to explore the influence of online supervision via video conferencing on students' problem understanding and reflective learning for better engagement. In order to achieve this aim, the following objectives were constructed: 1) to assess the influence of online supervision via video conferencing in terms of perceived flexibility, interaction, functional benefits, and control on postgraduate students' problem understanding and reflective learning, 2) to evaluate the influence of personal experience in terms of students' reflective learning and problem understanding on their online engagement, and 3) to understand the university students' perception towards the effectiveness of the videoconferencing tool for supervision purposes. A mixed method approach was adopted for this study where online survey was utilized. A total of 252 postgraduate students from three colleges in

the King Saud University participated in this survey. Meanwhile, for the qualitative part, a semi structured interview method was conducted on 15 selected postgraduates' students, in which the thematic method of data analysis was applied. The PLS analysis of the data obtained from the 252 respondents supported the hypothesis that perceived interaction, perceived functionality, and perceived control had positive influence on both the problem understanding and reflective learning of students subjected to online supervision through the use of video conferencing. Although perceived functional benefit has positively influenced students' reflective learning, such finding was not observed on problem understanding. The findings effectively validate the effectiveness of video conferencing in promoting students' learning and understanding of research problems. Meanwhile, based from the interview, four themes have emerged from the qualitative analysis, and they involve functional benefit, convenience & communication, flexibility, and setting research goals. The interviewees emphasized that although the video conferencing tool saves time and effort, it is high-cost, accompanied by slow internet. The results from this study have highlighted the important roles of video conferencing thus supported this mode of remote supervision at King Saud University and the Ministry of Higher Education in general. The application of this mode of supervision would prove beneficial in improving the quality of distance learning for students, especially those from remote areas.

# CHAPTER 1
# INTRODUCTION

## 1.1 Introduction

Videoconferencing is an innovative network-enabled information and communication technology. It can improve and enhance student supervision (Alberta, 2006). Videoconferencing technology builds a live connection between students and supervisors located at different geographical locations via the Internet. With the strong connectivity, the online interaction can provide a clear view of the activities on both ends creating an excellent audio-video interface (Alberta, 2006). The aforementioned characteristics associated with video conferencing, enable high levels of immediacy between the students and the supervisors which ultimately boosts erudition and expedites productive collaborative conversation and supervision (Kahneman, 2011). Moreover, the potential of video conferencing as an advanced technology application is believed to link remotes sites together with a new way for the delivery of learning and professional development.

The use of advanced technology for simplifying communication and information sharing has significantly increased users' interest to apply in everyday practice. With the dramatic rise in user demands, the technology has changed to meet their learning goals (Lai, Shum, & Tian, 2016; Savery, 2015). Information and Communication Technology (ICT) related tools offer an alternative learning experience by providing the medium for users to communicate and learn in a synchronous and asynchronous space. For example, previous studies (Augestad & Lindsetmo, 2009; Knipe & Lee, 2002) have shown the potential of current teleconferencing tools in promoting peer-to-peer communication by enabling users to access files and peripherals without the need for a central server. Lakhal, Khechine, and Pascot (2013) stated that online supervision

practices could encourage the application of video conferencing to support active interaction. Video conferencing supports two-way synchronous and asynchronous communication (Kuo, Walker, Belland, Schroder, & Kuo, 2014). Such communication through video conferencing is perceived by university academics to maintain the main elements of the traditional classroom setting in a more interactive form (Blau, Weiser, & Eshet-Alkalai, 2016).

Besides, online supervision allows for a convenient way to discuss ideas enabling the students to interact with multiple members to solve academic problems or learn new concepts at their convenience (Rehn, Maor, & McConney, 2016). Previous studies have characterized communication in the learning process, including the students and teachers as a process for increasing the level of awareness and insights gained from an inquiry-based discussion (Bloomberg, 2020). It includes adding to or fine-tuning of individual's understanding of a concept or subject of interest (Loughran & Northfield, 2003). The flexibility is viewed to provide the necessary antecedents for individuals' reflection, with opportunities for both the reflective students as well as the supervisor to contribute (Butz & Stupnisky, 2016).

In Saudi Arabia, teleconferencing has grown in demand for distance education (Al Fadda, 2019; Zalzadeh, 2012). The rise in popularity is due to the recent change in the ministry's policy of higher education in Saudi Arabia to support university students with suitable modes of learning and teaching delivery (Alghamdi, 2015). Several universities in Saudi Arabia consider the role of video conferencing as a medium of interaction for students and instructors (Alashwal, 2019). The importance of videoconferencing has motivated Saudi universities to encourage students and instructors to make use of such systems to extend their on-campus programs to those

who are unable to attend university classes regularly due to location and job-related aspects (Al-Dosari, 2011; Altowjry, 2005). According to Erichsen, Bolliger, and Halupa (2014), this would also help to maintain active communication between postgraduates' students and supervisors through the advanced monitoring of research performance. Within the context of this study, the researcher assumed that problem understanding could be used as an indicator of whether the student finds discussions to be relevant and related to their learning needs. Goosen and Heerden (2018) stated that stimulating students' understanding of a learning problem can be achieved by making clear information or features learners should engage in within a discussion.

Making the engagement process smooth and better during a course will help to understand factors that can help in promoting reflective learning. Active and reflective learning is vital for achieving high engagement (Abrahams & Singh, 2010). Previous studies also addressed the importance of promoting reflective learning in discussion-related activities as a means for maintaining the relationship (created via dialogue) between students and supervisors (Beech, McGill, & Brockbank, 2017). Students' communication with their supervisors in the video conferencing environment is likely to promote reflective dialogue where both students and the instructors work closely to achieve meaning and knowledge with the material (Fullana, Pallisera, Colomer, Fernández Peña, & Pérez-Burriel, 2016). The study material and how it is worked on is a product of that relationship between those in dialogue.

Just simply providing students with online access to learning material is not adequate. Researchers have stated that online learning should move towards a model that is student-centered in which collaboration among students is encouraged and engagement is promoted (Paulsen & McCormick, 2020). From these observations, it

could be understood that examining the impact of online supervision via videoconferencing on students' engagement may enable decision-makers in Saudi Arabia universities to exercise and develop personal learning experience by allowing students to use the available resources to understand an idea and provide means for them to engage in active supervision. As a result, it has motivated the researcher in the present work to consider examining the potential influence of videoconferencing as a supervision tool on postgraduates' engagement.

## 1.2 Research Background

According to Hamdan (2014), most Saudi universities have been challenged concerning students' engagement in an online learning system, which mainly concerns making them more independent and taking charge of their own decisions. Alwehaibi (2012) asserted that the process for promoting students' engagement in Saudi universities consists of using the traditional metacognitive strategies that need to be extended further to incorporate another suitable medium for facilitating active communication. Improving individual learning is considered a complex process involving the interaction of several elements that reflect both students' and instructors' characteristics (Stacey, 2001). Hence, the use of videoconferencing tools may help students to participate in an active learning experience that may act as the central element for establishing their engagement with the supervision task (Giddens, Hrabe, Carlson-Sabelli, Fogg, & North, 2012; Havice, Davis, Foxx, & Havice, 2010).

Students' commitments and interaction with the supervisor via distance is a clear example of the effectiveness of ICT which includes specific monitoring strategies and other advising methods, as well as providing the substances essential for ensuring successful supervision (Dymond, Renzaglia, Halle, Chadsey, & Bentz, 2008). Al Kadri,

Al-Moamary, Magzoub, Roberts, and van der Vleuten (2011) have addressed some of the learning difficulties faced by most postgraduates in Saudi higher education especially when they are attempting to communicate with their supervisors. Some of these difficulties include the time constraints for supervisors due to other work commitments that make it difficult for students to progress with their research. University instructors in Saudi Arabia view supervision as a process to guide students throughout their studies (Abouzahra, 2011). The students are expected to independently search and explore relevant information to construct a solid understanding of a concept (Basuhail, 2015). Then, students are expected to share their knowledge about a problem with their supervisors to confirm and adjust per the study goals (Alzahrani, 2015).

According to Alberta (2006), videoconference activities can be classified into three major types of innovative applications namely;

i. Enhance student learning in regular classrooms through the use of collaborations with other remotely distributed students, community experts, and distributed learning resources; and,
ii. Deliver courses by distance education to small and remote schools where full programming options are often reduced because of small class sizes and shortage of specialist teachers.
iii. Enhance and expand administration services and professional development activities for staff.

Supervision is an interactive process that requires the participation of both students and their affiliated supervisors (Al-Shahrani & Mohamad, 2018). The lack of interactive and flexible means for adequate supervision is the main concern of Saudi Arabian higher education (Yousif et al., 2014). Still, even after great technological advancements,

the literature has pointed out that the students' fewer interactions and less course engagement with the supervisors are a few of the main issues present in online learning. However, the conventional e-learning tools may not necessarily incorporate the required functionalities for establishing a shared cognitive atmosphere to significantly influence students' experience and learning (O'toole, 2008; Turney & Pocknee, 2004). Teleconferencing tools come handy in the context of distance supervision as it allows the supervisors to discuss the students' research work albeit physically separated in different locations. In addition, postgraduates' perceptions about the benefits of videoconferencing tools will help promote active online engagement (Volery & Lord, 2000). Such distance supervision will improve the way for guiding and supervising students' progress and avoid any potential conflict that may arise when students or supervisors are unable to meet face-to-face regularly (Wang & Kang, 2006).

Previous studies showed that regular supervision faces several problems related to students' feeling of control which may occur when there is a little clarification of the concept being studied (Kennepohl, Baran, Connors, Quigley, & Currie, 2006). From a Saudi perspective, this shortcoming is caused by weak communication, lack of cooperation, and trust (Al-Hammad, 2000).

Furthermore, there are several issues reported by the Ministry of Higher Education of Saudi about the current practices of traditional postgraduates' supervision (Abdulkareem, 2001). These include the lack of mechanisms to promote active interaction, commitment to the learning task, and effective participation. To resolve the aforementioned issues, the current system of education at King Saud University is passing through a period of significant transition with technological deployment for developing the quality of learners' learning which has led to the introduction of

supervision activities using online learning tools alongside traditional learning and teaching practices (Alabdulkareem, 2014). Some universities such as King Saud University are now considering online supervision as an option for facilitating lecturers' management of postgraduates.

However, the potential of this practice in tackling the mentioned challenges and issues is yet to be examined with regards to students' engagement. Moreover, most of the past studies have mostly focused on understanding the effect of adopting the technology instead of exploring the factors that impact the relationship between the supervisor and students and factors affecting the relationship such as control, interaction, and flexibility (Al-shahrani & Mohamad, 2018). Working in supervision reform without having this kind of information is a significant deficit that might misguide the efforts for improvement (Khun-Inkeeree et al., 2019). Therefore, this study is conducted to determine the influence of online supervision via videoconferencing on postgraduates' online engagement at King Saud University.

## 1.3 Problem Statement

Many previous studies from different perspectives have documented the profound impact of videoconferencing on students' learning. The utilization of technology imposes an influence on students' various cognitive experiences in other learning conditions. Based on this, Saudi universities are becoming more concerned about assessing the role of technology utilization in driving students' learning experience (Smith & Abouammoh, 2013a).

However, in terms of videoconferencing for online supervision, two issues have been recognized within the current studies: 1) the relationships between instructors and students have not been adequately explored in Saudi higher education (Almalki, 2011;

Baki, 2004). Most previous studies focused on the effects of technology on students by assessing differences in online and traditional lectures rather than exploring the supervision relationship between instructors and students, 2) the validation of online supervision effectiveness via videoconferencing in individual Saudi universities may influence its generalization to other universities in the Kingdom (Al Ghamdi, 2017). King Saud University (KSU) considered the potential of using videoconferencing as an alternative means for engaging both students and instructors in online supervision practices (Algarni & Burd, 2015). According to Wisker and Kiley (2014) and Wisker (2007), universities are required to take appropriate measures when implementing distance programs to resolve the issues arising during supervision. Additionally, Nasiri and Mafakheri (2015) emphasized that distance could result in miscommunication leading to misunderstandings between the supervisor and student, especially those from different backgrounds. They found that the current literature offers limited evidence about the potential of distance postgraduate research supervision from a university standpoint.

Furthermore, researchers such as Negahbhan and Chung (2014) as well as Wang, Dong, and Shao (2017) have also researched the perceived flexibility, interactivity, functional benefits and support, and usefulness in online learning and identified that they are vital for understanding behavior especially when it comes to learning online. It was also stated by them that if the functionality of the system is properly explained, learners can adopt technology efficiently. Different researchers such as Rennie and Morrison (2013) and Fernandes, Gettinger, Melzer, and Schoop (2014) have pointed out that perceived flexibility is a major behavioral factor that has a strong impact on learning.

Meanwhile, Correia Liu and Xu (2020) argued on the role of flexibility and video conferencing in education, in terms of its effectiveness and ease of use of online learning platforms, as inflexibility is one of the most prominent obstacles facing learners and the educational process in general. Al-Samarraie (2019) indicated that interaction is the advantage that the video conference excels from other systems, which in turn facilitates direct communication between the receiver and the sender.

Spafford and Haarhoff (2015) and Barreda, Bilgihan, Nusair, and Okumus (2016) explored interactivity and stated that interactivity drives reflective learning and interaction has a direct impact on understanding. Meanwhile, perceived control of the user was also observed to be a critical factor and Hase (2016) noted that reflective learning enhances the capacity of the students to take accountability for their knowledge when they have greater control of the learning. All these factors mentioned above have a direct impact on reflective learning in the context of online supervision and video conferencing but have never been combined to find out the impact on students' online learning especially when it comes to a location like Saudi Arabia.

In addition, some studies (example: Alshahrani, 2016; Fatani, 2020) revealed that Saudi university students have difficulties in dealing with videoconferencing; for example, the use of videoconferencing technology at the university is typically for students who learn via distance to which the understanding of its potential to promote their ability for solving related research problems is unknown. Since the use of videoconferencing in the program is mainly to ensure active participation between students and instructors, it still does not have any evidence on how this technology is used to promote postgraduates' learning experience. Students' interaction with their supervisors to understand and solve problems related to the research project is shallow.

In light of these observations, to improve the education quality at King Saud University and in Saudi higher education, in general, the emphasis should be given to the role of videoconferencing for facilitating instructors' and students' interaction (Alkhazim, 2003; Al-Samarraie, 2019). Understanding the factors influencing students' supervision experience when using videoconferencing will increase our knowledge about how to ensure their engagement with instructors in an online context (Hamdan, 2005; Smith & Abouammoh, 2013b; Alshahrani, 2016; Fatani, 2020). Hence, this study was conducted to determine online supervision's influence via videoconferencing on students' problem understanding and reflective learning for better engagement in a university context.

## 1.4 Research Aim & Objectives

The main aim of this research is to investigate the influence of online supervision via videoconferencing on students' problem understanding and reflective learning for better engagement. In this mode of supervision, the materials are usually used and shared between the students and supervisors online. To be specific, the study examines the impact of perceived flexibility, interaction, functional benefits, and control of videoconferencing tools on both reflective learning and problem understanding towards online engagement. To achieve the study aim, the following objectives are proposed:

i. To assess the influence of online supervision via videoconferencing in terms of perceived flexibility, interaction, functional benefits, and control on postgraduates' reflective learning.

ii. To examine the influence of online supervision via videoconferencing in terms of perceived flexibility, interaction, functional benefit, and control on postgraduates' problem understanding.

iii. To evaluate the influence of personal experience in terms of students' reflective learning and problem understanding on their online engagement.

iv. To understand the university students' perception towards the effectiveness of the videoconferencing tool for supervision purposes.

## 1.5 Research Questions

Based on the research objective, this study attempts to answer the following questions:

i. What are the influences of online supervision via videoconferencing in terms of flexibility, interaction, functional benefit, and control on postgraduates' reflective learning?

ii. What are the influences of online supervision via videoconferencing in terms of flexibility, interaction, functional benefit, and control on postgraduates' problem understanding?

iii. What are the influences of students' experience from using videoconferencing in terms of reflective learning, and problem understanding of their online engagement?

iv. What are the university students’ perceptions towards the effectiveness of the videoconferencing tool for supervision purposes?

## 1.6 Research Hypotheses

After reviewing the literature and based on the interview outcomes with the Deputy Director of Research and Innovation Department at King Saud University

(KSU), this study proposed that when students are engaged in online supervision via videoconferencing, their reflective learning and problem understanding will be stimulated, thus affecting their online engagement. The following hypotheses were proposed (see Figure 1.1):

$H_1$ There is a significant influence of students' perceived flexibility of videoconferencing on their reflective learning.

$H_2$ There is a significant influence of students' perceived interaction with videoconferencing on their reflective learning.

$H_3$ There is a significant influence of students' perceived functional benefits of videoconferencing on their reflective learning.

$H_4$. There is a significant influence of students' perceived control of videoconferencing on their reflective learning.

$H_5$. There is a significant influence of students' perceived flexibility of videoconferencing on their problem understanding.

$H_6$. There is a significant influence of students' perceived interaction with videoconferencing on their problem understanding.

$H_7$. There is a significant influence of students' perceived functional benefits of videoconferencing on their problem understanding.

$H_8$. There is a significant influence of students' perceived control of videoconferencing on their problem understanding.

$H_9$. There is a significant influence of students' reflective learning in videoconferencing on their online engagement.

$H_{10}$. There is a significant influence of students' problem understanding in video conferencing on their online engagement.

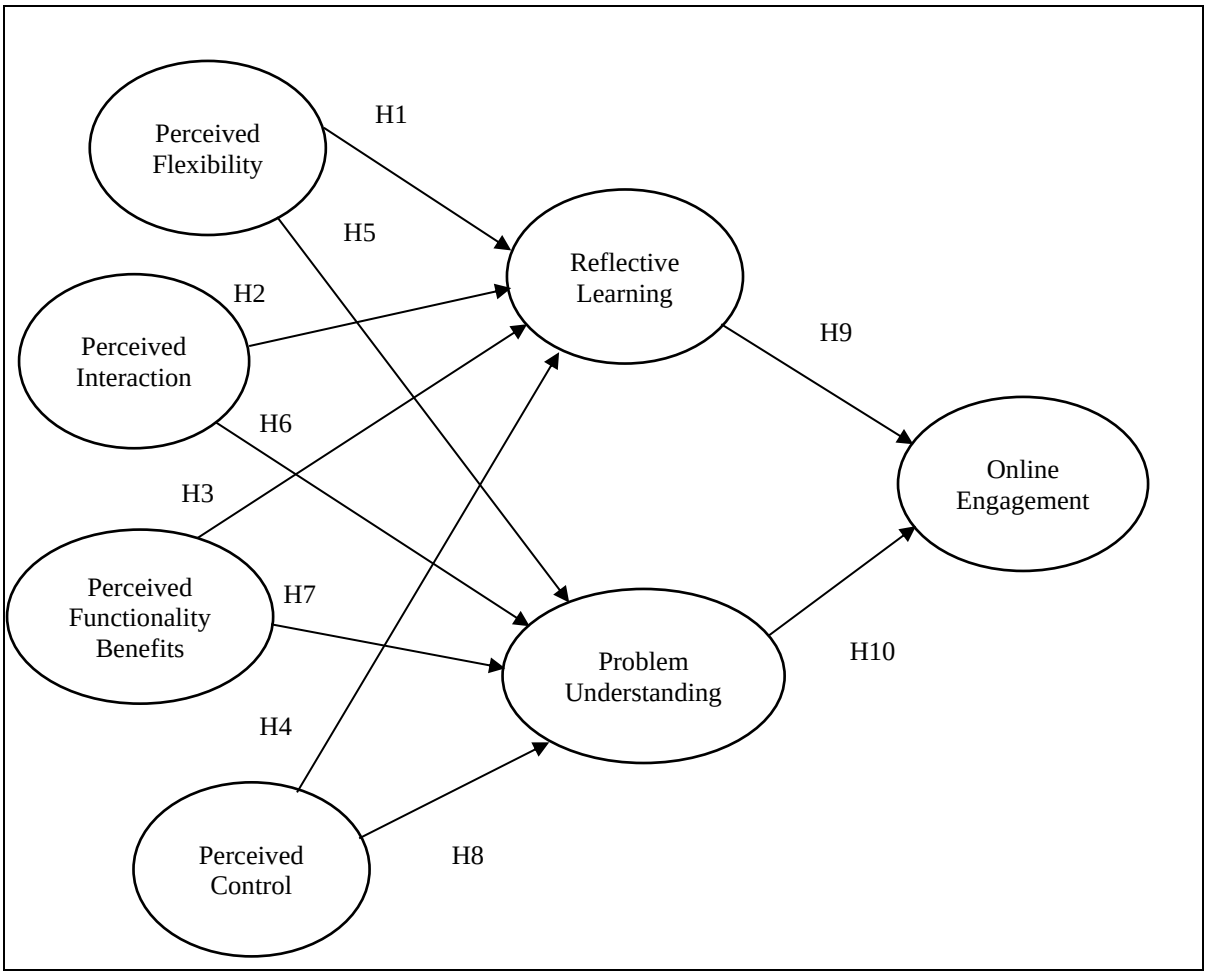


Figure 1. 1: Research Framework

## 1.7 Theoretical Framework

The theoretical framework in this study was based on the association between four key concepts involving Zone of Proximal Development (ZPD), Transactional Distance Theory (TDT), Dewey's Model of Experience, and Task Technology Fit (TTF) Theory. The main aim of combining them was to understand how distance learning can occur efficiently under supervision and what factors can impact the students' online learning in Saudi Arabia.

According to Vygotsky (1980), the primary objective of ZPD was to identify how certain aspects of behavior and cognition are developed with the aid of skilled and

knowledgeable individuals. This concept focuses on several different domains of development: human evolution, development of human cultures, individual growth, and development that occur during a learning session or activity. In this study, ZPD is used to explain the role of videoconferencing as a scaffolding tool in online supervision that may impact students' progress in their research.

ZPD was also explained by Vygotsky (1980) as a way to explain learners' actual level of development and progress in a learning task through the use of psychological tools or semiotic mediation. The main idea of ZPD is that a learner can effectively process and understand the given information when working together with others during collaboration. This research also considered the TTF theory which focused on the factors of task characteristics and technology characteristics (see Figure 1.2). The impact of technology-related factors is directly considered on the performance of the users (Junglas, Abraham, & Watson, 2008). In this study, this theory was used to explain the factors involved in video conferencing that can impact the learner's experience. The main idea of ZPD is that a learner can effectively process and understand the given information when working together with others during collaboration.

According to Svensson and Ingerman (2010), technology characteristics would positively influence individuals' ability to formulate meaningful knowledge necessary for solving specific learning problems. This observation was supported by Gupta (2016), who indicated the direct association between technology-related factors and individuals' cognitive dimensions in an online context. When learners engage in an online learning task, they are supported to be influenced by the characteristics or facilities of the presentation medium in a way that increases or decreases their understanding of the taught topic (Kuo & Hwang, 2015). Getting learners to communicate

and share ideas via distance may regulate their thoughts and knowledge, thus affecting their engagement with the task at hand. For example, Barak, Watted, and Haick (2016) stated that communication methods could facilitate individuals' attention based on the level of interaction exchanged. From observations, the researcher considered the potential of TTF in explaining the association between videoconferencing tools and students' cognitive experience in an online supervision context.

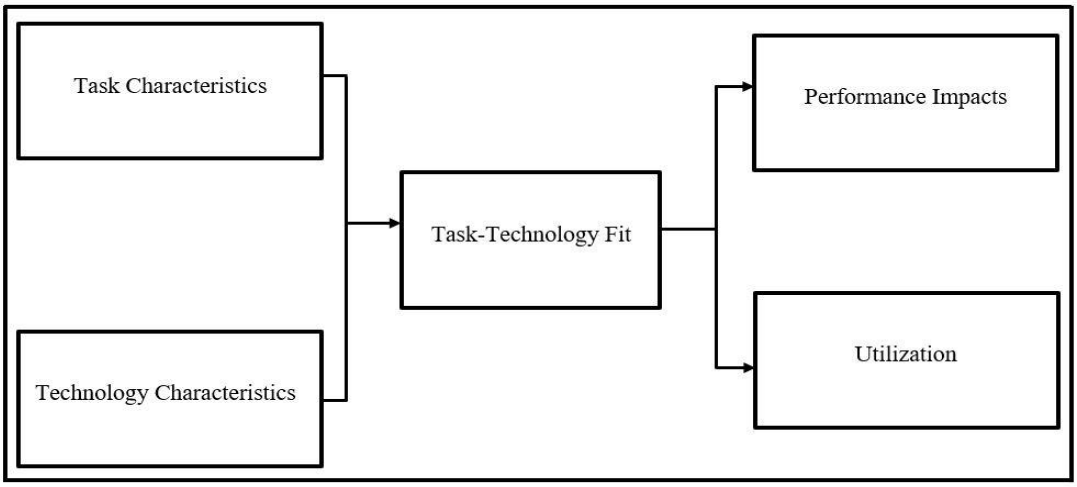


Figure 1. 2: Task Technology Fit (Goodhue & Thompson, 1995)

Moore (1993) described how a particular activity shared by one learner and instructor within the context or setting/environment could be different from those in another context. He stated that transactional distance is a continuous rather than a discrete variable that provides both learners and instructors with the required elements for attaining specific outcomes such as positive interaction, self-directed learning, and engagement. From this, the researcher considered that videoconferencing would provide the means for students and instructors to communicate through degrees of transactional distance.

Theory of Transactional Distance (Moore, 1995) states that learners and instructors can define their learning goals through dialogue which allows them to interact when one gives instruction and the others respond in the process of given directives as well as

responses. This idea of discourse is shown in Figure 1.3. According to Gorsky and Caspi (2005), the TDT is useful in explaining the role of technology in higher education. Some researchers such as Benson and Samarawickrema (2009) and Kang and Gyorke (2008) view it as a basic analytical framework for understanding the distance-education system. The theory emphasizes the need to reduce transactional distance. The theory is assumed "true" and is taught at institutions of higher learning. Based on this, students and instructors are expected to construct the necessary dialogue in videoconferencing that helps to strengthen the relationship among them to deliver the defined outcomes. This study used TDT to address the interaction between students and supervisors using videoconferencing for discussing research-related topics that will drive their experience. This experience was reported by Kassab, Al-Shafei, Salem, and Otoom (2015) to mediate the influence imposed from using a system on the individuals' learning characteristics. Based on this, it was assumed that using videoconferencing among students in the supervision context can sufficiently stimulate their understanding and reflective learning of the learning task.

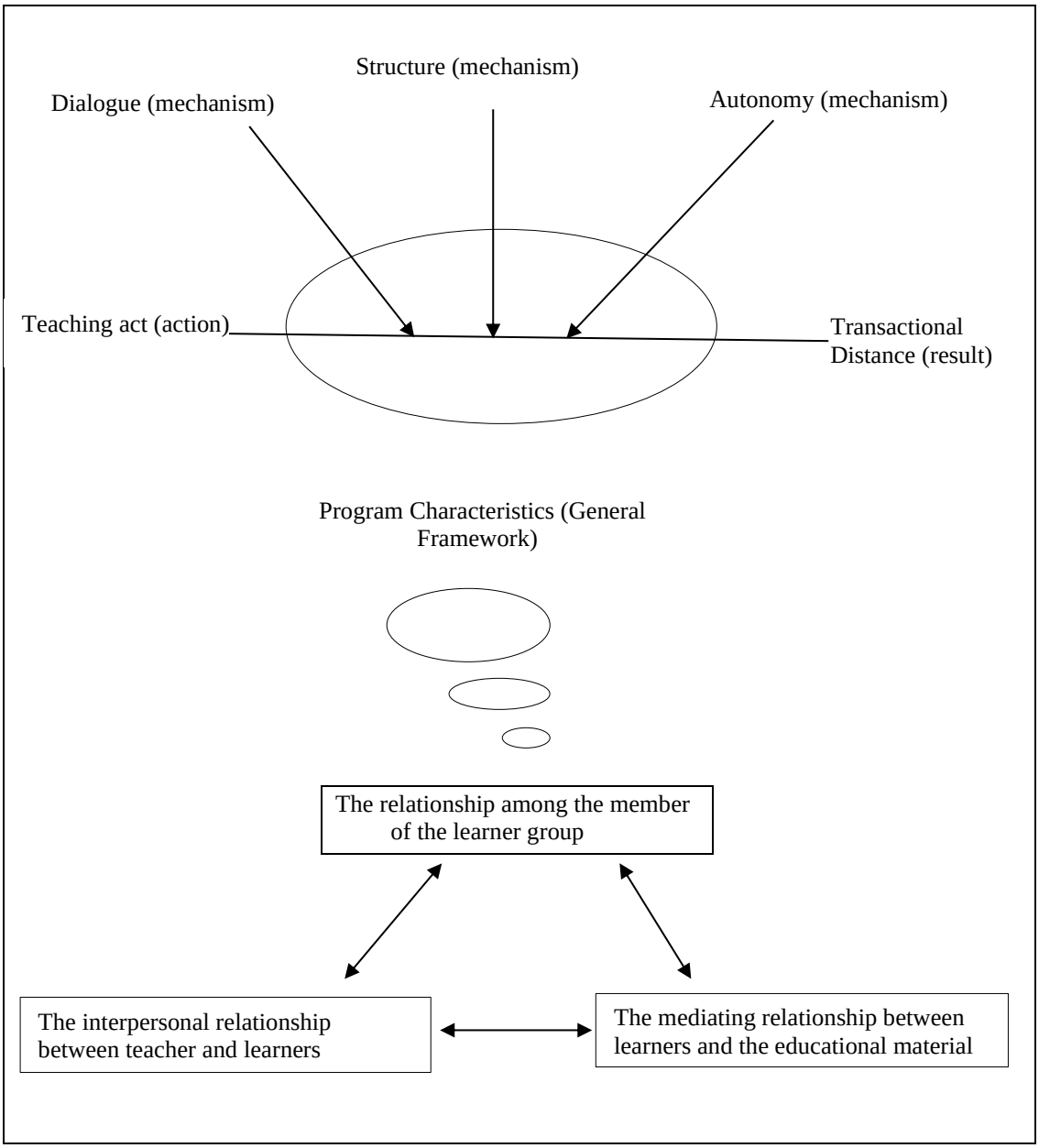


Figure 1. 3: Moore's Transactional Distance Theory (Giossos, Koutsouba, Lionarakis,

& Skavantzos, 2009)

Meanwhile, Dewey (1986) introduced the main idea of structuring one's experiences based on three stages: purposive planning, reflective inquiry, and transformative action. The differences between these stages are blurry, but they can be understood independently. With this regard, students' experience in terms of reflection and understanding of the problem can represent the degree to which they should

develop their engagement. Reflection is a significant process by which knowledge is derived from experience. Individuals are using their experience to determine how things went - how they felt and what they learned. Reflection is particularly important for puzzling experiences, understanding personal actions, and illuminating everyday issues, values, and capabilities (Figure 1.4).

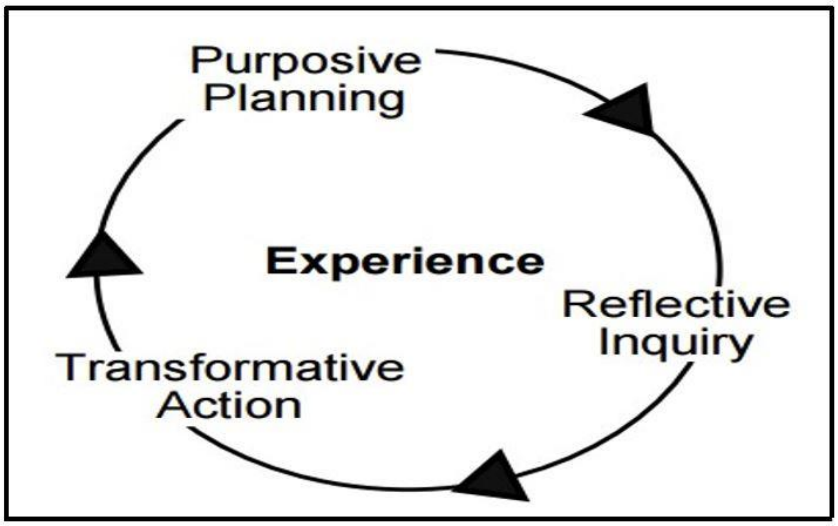


Figure 1. 4: Dewey's Model of Experience (Dewey, 1986)

Based on this, the researcher used this theory to explain the potential of videoconferencing tool in driving students' experience in terms of reflective learning and understanding of the problem towards better engagement. It is evident from the work of Park (2015), who clearly showed the relationship between learners' cognitive experience and their level of employment in an online learning environment.

Based on the discussion, the theoretical understanding of this study was constructed, as shown in Figure 1.5. This framework highlights the relationship between the study variables. It can be seen that this study aims at determining the effect of videoconferencing as a tool for promoting online supervision among postgraduates of

KSU. This includes specific antecedents in terms of environmental interaction, perceived flexibility, functional benefit, and control on students' experience.

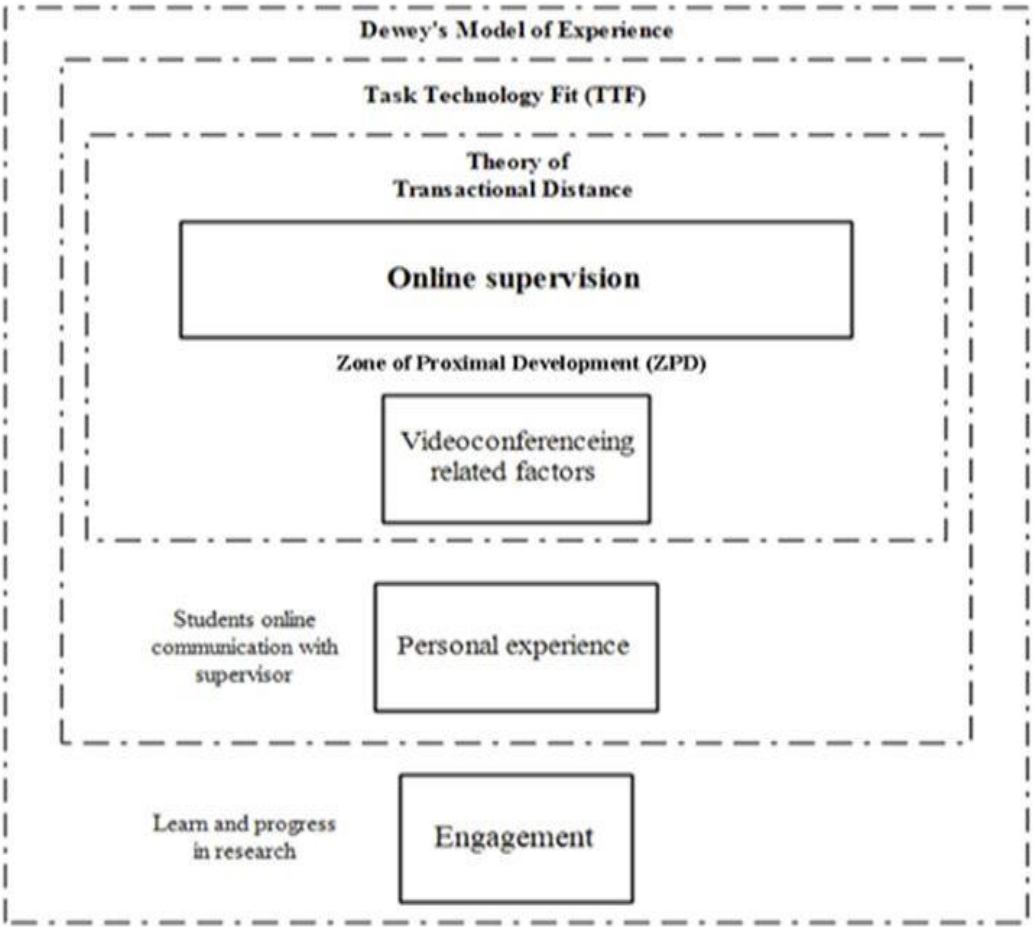


Figure 1. 5: Theoretical Framework

## 1.8 Research Significance

This study would directly help KSU to raise the standards of distance learning and indirectly assist the Ministry to improve the standard of higher education in Saudi Arabia. This study creates a basis to understand the boundaries of teleconferencing services such as videoconferencing to provide the communication-related elements necessary for postgraduate engagement in an online context. It will also serve as a source for explaining how videoconferencing can promote the current supervision practices in Saudi Arabia, as opposed to the traditional face-to-face method.

Also, this study would provide insights on how teleconferencing-related services can empower the current supervision practices through the use of structure and formed dialogues between students and supervisors. It would also contribute to the existing theories on digital learning like Transactional Distance Theory by explaining the association between instructors and students when communicating through a medium that allows active interaction and managing of previous discussions for understanding various learning problems. It is assumed that the results of this study would empower the traditional supervision practices by opening the doors for Saudi higher education to improve students' online engagement with their supervisors. Lastly, the findings of this research will help to guide potential learners, academia, and also contributes theoretically to the knowledge of understanding the factors involved in online learning. This study will also add to the literature on how interaction and other factors are involved in an online course that can help to make the course successful. The results of the study will provide new information regarding the understanding of the factors that influence the interaction of the learners with their instructors and peers in a country like Saudi Arabia.

## 1.9 Operational Definition

### 1.9.1 Videoconferencing

Videoconferencing is a teleconferencing service that enables two or more people in different locations to be connected by a device that provides pictures and sound (Hahn, 2008). For this study, videoconferencing is used as a medium for allowing students-instructor communication during the supervision period. Videoconferencing media include the use of interactive computer networks and audio, video networks that are linked by cable microwave, and satellite during the supervision period

### 1.9.2 Online Supervision

Online supervision is defined as the process of interacting and conversing a set of pre-defined goals that involve the teaching-learning process (student-instructor) with active involvement and communication through an online means (Reinders, Cho, & Lewis, 2013). This study refers to the use of videoconferencing tools to stimulate student-supervisor communication and discussion of various research-related matters that take place in a specifically configured environment. Postgraduate students undertaking master's and PhD programs are considered in this study.

### 1.9.3 Perceived Flexibility

Perceived flexibility refers to the value and ease of the system (Logofatu, Boboc-Corcotoi, & Logofatu, 2006). Previous studies used it to investigate the effectiveness of components and the ease of use of online learning platforms (Li, 2014). In the context of this study, it refers to the value and comfort of videoconferencing to adjust to both students' and instructors' needs through structured dialogues and the managing of discussions.

### 1.9.4 Perceived Interaction

Perceived interaction refers to the understanding of a system's ability to provide interactive communications between students and instructors (Abbad, Morris, Al-Ayyoub, & Abbad, 2009; Wu, 1999). It is mostly related to the user-system interaction than an assessment of the degree to which that interaction helps in achieving external benefits (Van

der Heijden, 2004). In this study, interactivity refers to the potential of videoconferencing to provide a real-time, two-way, and fast means of interaction between students and instructors.

### 1.9.5 Perceived Functional Benefit

Perceived functional benefit is defined as the ability of a system to provide a certain kind of service to support the ongoing activity (Wu, Hsia, Liao, & Tennyson, 2008). It describes the system functionality based on the extent to which individuals believe that the software they use supports all the functions and features that they need to perform their daily tasks. In this study, functional benefit refers to the ability of videoconference to provide the services to facilitate the supervision process. These include digital documentation, screen capturing, and online drawing.

### 1.9.6 Perceived Control

Perceived control in general, is composed of elements of individual constraints that are related to the user's economy, experience, and skill in using a system (Bhatti, 1970). It is defined as the degree to which users perceive a plan to allow them to control their actions (Cheng, 2012). Other scholars like Zimmerman (2000) defined it as the belief that one can influence outcomes from a particular use. This study refers to the degree to which students find videoconferencing to allow them to control their actions in the discussion, influence, dominance, autonomy, and clarity.

### 1.9.7 Reflective Learning

Reflection is an active and conscious process that helps students restore and relive the experience, understand thinking about it, put it in context, and evaluate it to make decisions and choices about what they went through, how they tried it, and what they will or will not do next (El Miedany, 2018). This involves making a taken-for-granted situation problematic, raising questions regarding its validity (Mezirow, 1992). In the context of this study, it is defined as students' ability to focus, create meaning, and contribute to the discussion in a video conferencing environment. This includes the formation of an argument according to the discussion and re-appraise the experience.

### 1.9.8 Problem Understanding

Problem understanding refers to the specification and simplification of problems by a person through defining several conditions and assumptions of the real-world problem (Mousoulides, Christou, & Sriraman, 2008). This study refers to students' understanding of research problems that they might face when discussing their research work and how they might solve them in a video conferencing environment.

### 1.9.9 Online Engagement

It is defined as a multidimensional and complex construct that requires more attention within the context of one-to-one interactions (Rohm, Kaltcheva, & Milne, 2013). Here, it refers to the students' active participation in videoconferencing to accomplish their

learning tasks. This may include discussing attention focus, curiosity, intrinsic interest, and overall engagement.

## 1.10 Summary of Chapter

The potential role of videoconferencing in assisting students' learning experience and better engagement was introduced in this chapter. The problems faced by King Saud University and other Saudi universities from the supervision perspective are listed. The evidence from previous studies form the basis for developing research questions and objectives. In addition, several theories that are relevant to this study were proposed and discussed. The upcoming chapter deals with the review of previous works within the context of this study.

# CHAPTER 2
# LITERATURE REVIEW

## 2.1 Introduction

This chapter provides an in-depth understanding of the main concept behind this study. The literature review chapter is organized into three sections. First, it elaborates on the video conferencing tool together with its applications and advantages. The second section provides the literature review of the higher education system in Saudi Arabia, supervisors and ICT, and online learning and interaction. Additionally, the third section discusses previous studies related to video conferencing tools, the underpinning theories for the study, and the development of the research hypotheses.

## 2.2 Videoconferencing

The massive use of Information and Communication Technologies (ICT) related tools in the educational context has motivated many previous researchers to investigate and explore the positive and negative consequences of using these tools in learning-related matters. The highlighted literature under investigation shows the contribution of online tools in the current supervision practices as Polycom HDX 800. This involves the use of video conferencing as a scaffolding tool for facilitating students' engagement in a university context. Furthermore, video conferencing applications are also present in classrooms and it is accepted as a way of teaching in schools. The utilization of video conferencing as an efficient technique for instructor preparation and professional advancement is also investigated.

Flexibility is one of the distinguishing features of a Polycom HDX 800. The use of video conferencing with education in recent times has made the Polycom HDX 800 more viable. Early employments of video conferencing can be found in medical-related