MULTIPLE INTELLIGENCES AND NETWORK AFFORDANCES: CAN VIDEOS ENHANCE STUDENTS' PERCEPTIONS OF THEIR LEARNING EXPERIENCE, LEARNING OUTCOMES, AND SUBJECT ENGAGEMENT?

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ABSTRACT

In conjunction with the arrival of emerging technologies, many universities are encouraging their educators to rethink and reframe their teaching approaches and delivery methods. Integrating different types of media to enhance delivery of subject materials to higher education students is growing in national and international importance. As a response to the technology-enhanced approach, a more student-centered experience that actively engages students is promoted. This mixed-methods research focuses on students' and lecturers' perceptions of the value of online videos in relation to student's learning experiences and engagement with respect to the effect of multiple intelligences. This helps to clarify whether there is a relationship between students' multiple intelligences scores and their age, gender, learning experience and motivation. This study also reports on interviews conducted with both lecturers and students. It seeks to answer how and why students use online videos, and how this might influence engagement in their subjects. It provides a clear voice on their views concerning the benefits, and challenges of online video use, along with any positive or negative suggestions regarding their experience of the technology. It also reports whether employing various types of videos within a subject could increase and support learning needs and intelligences of students. Furthermore**,** lecturers' perceptions of different modes and purposes for online videos and their views, understanding, and challenges of the learning and teaching environment in a flipped classroom approach are investigated.

Analysing the quantitative data, a number of important insights were obtained. For example, it was revealed that students are higher on Intrapersonal intelligence and lower in Existential intelligence. Bodily-Kinesthetic and Musical-Rhythmic intelligences were other highly developed intelligences of students.

Based on the lecturers' responses, there seems to be distinctive similarities and differences between two disciplines in the extent of video integration and types of videos that they use. The most visible similarity between these participants is in terms of incorporating different kinds of short YouTube videos. As for Tech-literacy, unlike participants from Behavioural Sciences who relied on videos from YouTube and other online resources, all Educational Science participants could create their own videos by using Camtasia, and not having a reliance on the available online sources. Moreover, there seems to be certain tech-literacy differences between baby boomers and Generation Xers.

Considering lecturers' perception on the flipped classroom approach, the study revealed some challenges in their teaching. According to the data gathered from interviews, it seems that the challenges are around the use of Camtasia, rigidity (clunky platforms), technology access and funding, technology mastery, upskilling in latest technological change and innovation, the structure and the pedagogy and the types of activities that they implement. The findings also revealed many advantages in successfully implementing the flipped model. For instance, the participants claimed that offering subjects in this approach provides students the opportunity to view lectures at home; thus freeing class

time for demonstrating problem solving and deeper discussion-based face-to-face learning and understanding of the material.

Students' interview findings revealed that the videos were perceived to be beneficial for students' engagement and motivation. The results also revealed that interest plays a major role for students who are keen to watch the topics that intrigue them. Based on their responses, it seems that they were dissatisfied with monotonous video lectures that failed to make their learning interesting. It seems that students are no longer interested in too much reading, and prefer easier and less demanding modes of learning, i.e. watching videos which denote a change in their desired mode of internalizing knowledge to an easier one. Desire for brevity, conciseness, and to the point videos with no additional materials were also found more attractive and engaging for them. They enjoy the flexibility to be able to watch videos with no time and place restrictions. Variety is perceived to be important to Net-Geners in particular, and music and visual aids seem to be their preference and a significant motivational stimulus. Animation and simulation make their learning easier. They like cognition forming and cognition sharing as a team work strategy and have the higher stimulus of interactive communication. Lastly, it seems that videos could be used as new modalities for changing the life for people with various learning disabilities.

Based on students' responses, it seems that they were mostly satisfied with the video integration as they reported positive experiences from the videos uploaded and shared by

lecturers. The results revealed the interactivity of videos and students' preference toward games and pleasure and interest sparked by video integration. The results indicated that visually attentive students would be more intrigued and motivated if the lecturer had incorporated a visual modality. Video integration has made them free from the burden of note taking and paying attention to the lecture at the same time. Videos have provided them the opportunity and flexibility to refer back to what is being said by the lecturer with no time and place restriction and with the benefit of documentation once it is downloaded. The findings also revealed that videos cannot stand entirely by themselves and need supplementary material or tutoring on the part of the teacher. The students addressed the necessity of their lecturers' need for familiarity with the latest Apps, as well as the lecturers' need to overcome a lack of technology literacy, in particular, in the psychology discipline.

In conclusion, this study found that, with regard to online video materials, students also reported that videos could address their various intelligence types and abilities. Because students have different combinations of abilities and intelligences, they are attracted to various video activities based on different reasons, such as note taking, auditory and music, visuals, playing games, interactive discussions and questions, entertainment, and practical examples of real life experiences. Therefore, the existing video materials are sufficient to supplement the lesson curriculum and to address their intelligences.

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LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
AITSL (aitsl)	Australian Institute for Teaching and School Leadership
ALTC	Australian Learning and Teaching Council
BBS	Bulletin Board Systems
BL	Blended Learning
DEEWR	Department of Education, Employment and Workplace Relations
DVD	Digital Versatile Disc
EDA	Exploratory Data Analysis
FA	Factor Analysis
f-t-f	face-to-face
FL	Flipped Classroom
ICT	Information Communication Technology
IQ	intelligence quotient
MI	Multiple Intelligences
MOOCs	Massive Open Online Courses
NBN	National Broadband Network
NSSE	National Survey of Student Engagement
PCA	Principal Component Analysis
PBL	Problem-based Learning
OLT	Office for Learning and Teaching
TEQSA	Tertiary Education Quality and Standards Agency
VAM	Video Affordance Materials

CHAPTER 1

INTRODUCTION

"If we teach today as we taught yesterday, we rob our children of tomorrow"
(John Dewey)

1.1 Introduction

Ever since John Dewey's words and prediction, educators across the world began considering the relevance of the traditional classroom setting to today's technology- based literacies. Technology is an important aspect in today's world and its application is continuously being assessed and investigated in the field of teaching and learning. In line with Dewey's advice to benefit from these fundamental developments and to embrace the new technologies while adhering to the regulatory environment, higher education institutes increased their effort in preparing, funding, and supporting their academics and students.

Higher education in Australia is currently undergoing extensive reforms, and plays an important role in the nation's intellectual, economic, cultural and social development. The Australian Bureau of Statistics (ABS) reports that the number of domestic students in higher education have increased from 957,000 in 2005 to 1.2 million in 2010 (ABS, 2015). Recently, the Minister for Education and Training, Simon Birmingham, said that more than 1.2 million students were enrolled in higher education in the first half of 2015 (Australian Government, 2016). The latest figures available in the ABS (2012) suggest that of the students enrolled in 2010, 81 percent were studying internally (on-campus), while 12 percent were external, and the remaining 7 percent were in mixed-mode

programs (both internal and distance/online modes). These numbers show an approximately 25 percent increase in domestic student participation while international student numbers has grown at a faster rate. A recent report by the Australian Institute for Teaching and School Leadership (AITSL) (2014) also shows that the programs undergraduate students were enrolled in were: 66% for internal, 12% for external, and 22% for mixed. Given these numbers, it is not surprising to see that higher education has become an integral part of the government's vision in achieving a fairer and stronger Australia and Australia's fourth largest education export industry (Australian Government, 2015; Commonwealth of Australia, 2009; Gulson, Clarke, & Petersen, 2015; The Group of Eight, 2014; Universities Australia, 2013). Higher education is beneficial and supportive not only for economic development and employment skill, but also for Australia's leadership. This approach seems quite essential to enable Australia to participate fully in and benefit from the global knowledge economy.

1.1.1 The Australian Government's Role in Higher Education

Due to the importance of higher education to Australia's economy and growth in student numbers, the government has considerably increased its funding in the form of certain reform packages. These packages prioritize teaching and learning issues. The government proposed a landmark reform agenda for higher education and research in order to provide higher education opportunities to a new generation of Australians (Commonwealth of Australia, 2009). This culminated in the establishment of the Office for Learning and Teaching (OLT) on 16 November 2011 following the announcement of the then Prime

Minister, Julia Gillard, to support higher education institutes. In this regard, the Australian Government has committed $50 million over a four-year program through the Promotion of Excellence in Learning and Teaching in Higher Education Program. The OLT replaced the Australian Learning and Teaching Council (ALTC) that was previously known as the Carrick Institute for Learning and Teaching in Higher Education. The OLT promotes and supports reforms in higher education institutions for the enhancement of learning and teaching. According to a report released by the Department of Education, Employment and Workplace Relations (DEEWR) (2011), funding to higher education will see more significant improvements over the 2010 to 2015 years, although recent budget restrictions have meant cuts to funding in some areas.

Previously, increased budget allocations were made for improvements in teaching and learning and increased numbers of low socio-economic students in higher education. As part of the new package, in 2012 the higher education sector shifted towards a student demand-driven funding system. Such a shift entailed consequences for higher education providers of a market-driven system. In addition, the government claimed supporting higher education and research sectors “at a cost of an additional $5.4 billion over four years and would commit additional resourcing over the next 10 years” (Commonwealth of Australia, 2009, p. 5; Kayrooz & Parker, 2010, p. 169).

Besides increasing funding and growth in student numbers, attempting to increase the quality of teaching and learning has been another measure taken recently. This focus on

the quality of teaching and learning is evident by the number of major reports and papers that have emerged over the past years (Commonwealth of Australia, 2009; DEEWR, 2008, 2011; Probert, 2015; Universities Australia, 2013). In the 21st century Australia's capacity to provide a high quality of life for all will depend on the ability to compete in the global knowledge and innovation economy. According to 'Melbourne declaration on educational goals for young Australians' and a published report by the ABS, "education equips young people with the knowledge, understanding, skills and values to take advantage of opportunity and to face the challenges of this era with confidence" (ABS, 2012, p. n.d.; Barr et al., 2008, p. 4). In this climate, given the fact that students in a corporate model are considered as important customers, the greater emphasis is on quality assurance and students are viewed as important customers. Students' expectations of what they want from a university are higher than before due to the expenses involved in obtaining a degree (Harpe & Radloff, 2008). In response to the existing milieu, university administrators have become more conscious of their 'customers' and more attentive to the significance of engagement with learning and teaching in order to guarantee long-term sustainability.

1.1.2 Technology Effects on Progression to Australian Higher Education

The web and the computer, as an aspect of this context, have already changed the lives of learners around the world. Recent reforms in Australian tertiary education are a good case in point. Providing the students with the opportunity of complementing internal classes with the online alternative has been one of the crucial developments. Traditionally,

courses were offered in internal or face-to-face mode. Today, however, owing to the growth of technology and demand for alternative modes of delivery, some courses are offered fully or partially online. This use of the internet follows the aim of government to improve the accessibility of tertiary education for all Australians. Also this mode of internet learning and teaching would be beneficial to those students who otherwise could not participate internally. Modes of delivery such as online or blended may never entirely replace direct face-to-face involvement, but they have the potential to augment traditional instruction. For instance, Cooper and Sahami (2013) claim that online learning can serve as an effective means for students when other forms of delivery are not available. In addition, some researchers (Driscoll, Jicha, Hunt, Tichavsky, & Thompson, 2012; Keengwe, Onchwari, & Agamba, 2014) state that online learning may provide an effective learning environment if designed by using pedagogically sound practices. Accordingly, universities have utilized a number of online affordances to support learning and teaching.

One way to enhance teaching and learning via technology is using educational video clips across different modes and subjects. For instance, Sherer and Shea (2011) state that the use of online videos in higher education is increasing as part of the explosion of Web 2.0 tools that are now available. Thinking about how educational video clips can enhance learning gives academics the opportunity to adjust and update their traditional curriculum and teaching approaches to meet the needs of diverse learners in higher education. More recently, McCoog (2007), Henry et al. (2005), and the Bill and Melinda Gates Foundation (2010) highlight the importance of thoughtful and purposeful use of technology to

facilitate students' achievements. They state that it should help exploration of other learning avenues in the process of differentiating instruction with clear educational goals. It should also engage students in creative information gap activities and real experiential learning. For instance, to address the obstacles of US educational innovations and tap the potential of technology, the Bill and Melinda Gates Foundation argue that utilizing technology intelligently can dramatically improve American students' readiness and completion. Furthermore, the emergence of the Net- generation indicates that universities have to address and include the role of technology in their teaching and learning.

The Net-generations are "demanding a change in the classroom because of their ability to gather information faster than any other generation" (Sheskey, 2010, p. 197; Willingham, 2010, p. 1). With the increased use of computers and technology comes the increased need to equip learners to engage with the online challenges in different learning modes. In providing an optimal learning environment for online learners, we need to understand students' experiences and perceptions, as well as how to best use technology affordances to enhance face-to-face and blended classes.

1.2 Net Generation Students

A significant proportion of today's students are born into and grown up in an era of computers and the Internet, and frequently use them. Within this highly wireless environment (Flanigan & Babchuk, 2015; Ismail, 2010; Oblinger, 2008; Worley, 2011), they are almost always connected via new devices and social networking interfaces, and

are considered Net-generation students, a term coined in 1997 by Tapscott (2009). Net-generation refers to the young people born in between January 1977 to December 1997 (Rosen, Carrier, & Cheever, 2010; Tapscott, 2009). Net-generation is used interchangeably with terms such as Net-Gen, Net-Geners or Millennials (Onofrei, 2015; Pletka, 2007; Rosen et al., 2010; Sinouvassane & Nalini, 2016; Tapscott, 2009; Worley, 2011; Yee, 2015). According to Tapscott, there has been a change, from the previous generation, in the way that the Net-generation students gather, accept and preserve information.

The majority of today's undergraduate students belong to the Net-generation who are characterized as technologically advanced, diverse, extremely social, education oriented, self-confident, multitasking, and impatient. In the same way, some researchers (Collins & Halverson, 2010; Dede, Whitehouse, & Brown-L'Bahy, 2002; Jones, 2012; Klopfer, Osterweil, Groff, & Haas, 2009; McMahon & Pospisil, 2005; Pletka, 2007) argue that as Net-generation learners grow up in the information-age, they not only develop a digital mindset, but they also have greater connections through networking. In fact, it is claimed that they experience the world differently through its connection possibilities, what is sometimes called the information highway. Constant connection to the Internet via mobile devices is so integrated into their lives that it can be considered as a part of their collective being or as a technology-rich culture.

According to a recently published report by the ABS (2014), in 2010-2011, 79 percent, up from 74 percent of people aged 15 and above in 2008–2009, have used the internet. In addition, the report states that 75 percent, up from 68 percent, have had access to the net from home with nearly seven in ten (86%, up from 69% in 2008-2009) from the age of 18 to 24 that have gone online daily from home. While a decade earlier one in six were connected, today 'more than three-quarters (77%)' of Australian households have had access to the net (ABS, 2014). Since the Internet became widely available 18 years ago, Findah (2013) claims that internet growth continues among the population and its access has increased on an annual basis from 2 percent in 1995 to 89 percent in 2013. In a recently released report, it was announced that in the year 2015, 93 percent of the population has access to the internet (Davidsson, 2015). The National Broadband roll-out that is committed to providing high speed broadband services throughout Australia attests to this explosive growth (Valle de Souza, Dollery, & Kortt, 2016).

1.3 Background of the Problem

The globalization of education and technological development have changed the appearance and operation of modern society. This has motivated researchers to direct their attention to the use of Information Communication Technology (ICT) to help learners become confident and active communicators. With ever-changing and developing technology and Internet facilities, more communication possibilities are emerging, and more computer and Internet facilities are used for educational purposes.

Advances in technology and the integration of ICT with learning and teaching settings have quickened the growth of online learning and primarily have changed the way of learning and course delivery. Researchers in the field argue that ICT has proven its potential to satisfy the promising expectations of life-long learning by assisting in the delivery of high-quality services (McCoog, 2007). Indeed, the internet and networked technologies have well prepared the ground for flexible approaches to learning. These technologies have expanded the delivery mode of education, thereby making fundamental changes to the way students have traditionally experienced the learning environment. In recent years, many universities have increasingly tended to either offer online courses or to use online learning as an adjunct to traditional modes of learning. For instance, at this study's university site both internal and external subjects are offered in order to respond to the distinct demands of the students; the internal subjects include both face-to-face contact and online material whereas in the external subjects the students only study online.

Although Net-generation learners spend so much of their time online and are plausibly expected to have a strong preference for online courses, the reality is otherwise. Oblinger and Oblinger's (2005a) survey study found that a majority of students "preferred a moderate amount of IT in their classes", and that "face-to-face" interactions were preferable to online options (p. 2.11). According to the researchers, "the implication is that colleges and universities should not assume that more technology is necessarily better" (p. 2.11). In their perspective, utilizing the technology "to increase customization, convenience, and collaboration is well received; however, its integration into most

courses or curricula is not as deep as into students' personal lives" (p. 2.11). In another study (Kvavik, 2005) carried out among 4000 students, they were found to have a "moderate preference for technology" with regard to teaching and learning. They also had "mixed feelings" towards the use of technology in the classroom, and believed many of the ICT skills necessary for learning were acquired at college (p. 7.17). In this regard, the relative efficacy of online and face-to-face courses is still under question and needs to be revisited. The first step in understanding how the Net-generation students' needs could be met is to determine their preferences. Whether students fully employ online components of courses and individual tools, and whether they perceive these affordances as adding value to their educational experience and understanding is still unknown.

Further, maximizing the potential of technology and ICT to enhance learning across different modes and subjects is under question and should be subject to further research. School inspectors documented in a report in the UK that only two in six secondary school subject departments use ICT effectively, while the other four use it little if any (Triggs & Sutherland, 2009). They also reported that only few practitioners fully engage the possibilities of learning and teaching through the new technologies. Although this research has focused on secondary education, it is timely to consider ICT use in a university setting. Furthermore, it is important for educators to identify what determines successful implementation of ICT. Likewise, Sherer and Shea (2011) assert that "less than half of today's college students (44%) believe that "most" or "almost all" of their instructors use Instructional Technology effectively in courses" (p. 56). Weaving together

the ICT experience of teachers and students will assist in the integration of ICT for augmented learning.

On the other hand, many tertiary educators know or expect that technological innovation changes in educational aspects should improve the quality of learning for students. Also, many professionals in the field agree about using technology in classrooms, to accommodate the changing nature of literacy with the emergence of these new technologies (Brown, Bryan, & Brown, 2005; Collins & Halverson, 2010; Ferdig, 2007; Henry et al., 2005; Irwin, Ball, Desbrow, & Leveritt, 2012; Leu, Castek, Henry, Coiro, & McMullan, 2004; Willingham, 2010). However, there is a need to integrate new literacies introduced with the arrival of internet and network affordances into the classroom in order to prepare students with 21st century skills (Brown et al., 2005; Cramer, 2007; Klopfer et al., 2009; Speak up Project Tomorrow [SPT], 2010).

1.4 Statement of the Problem

Integrating different types of digital media to deliver and enhance course materials for higher education students is increasingly ubiquitous in universities. Among these computer and Internet-based innovations, educational video clips have become prominent due to their potential, in combination with effective pedagogy, for providing deeper thought processes, communication and interaction among users (Mundy, Kupczynski, & Kee, 2012). Educational benefits of online affordances and web-based information have provided both students and academics with an opportunity to see and discuss different

types of educational videos available only through an internet connection. According to Sherer and Shea (2011), integrating online videos to enhance a subject in any mode (traditional, online, or hybrid) provides many opportunities for students. For instance, it can enhance lectures, class discussions, examinations, and even students' skill competency.

Similarly, Lance and Kitchin (2007) argue that academics no longer need to carry outdated videos and DVDs (Digital Versatile Discs) from class to class as they can simply present the video by accessing the internet or intranet during class, copying the link into their presentation slides, or even inserting them into their web-pages. These and other resources can be interwoven to make the classroom more diverse. For instance, Greenfield (Lance & Kitchin, 2007) postulates that videos can offer "an accessible visual and emotional experience to students', presenting 'a literacy', and a new language – the 'language of images', and a form - 'symbolic visual codes'" (p. 113). As such, Mayer (2009) adds that "learners can better understand an explanation when it is presented in words and pictures than when it is presented in words alone" (p. 3). In a similar vein, Sherer and Shea (2011) state that the flexibility, accessibility, and content breadth of online videos provide opportunities for both teachers and students as they can be used to shape and contribute to subject content as well as increasing students' engagement in classroom activities.

Online affordances and web tools are typically designed to organize subject materials and to engage students often improving the quality of their learning experience and outcomes. The reverse could also be true. Counter to the studies positing that a mixture of media with the course will meet the needs of more learners and lead to better learning outcomes, Angiello (2010) and Means et al. (2009) believe that the inclusion of more media (e.g., videos, and online quizzes) in an online mode of instruction does not enhance the amount that they learn in online courses. However, despite the numerous studies performed in online learning and web tools, there are certain problems associated with the use of digital video that this study is going to address. These problems include a lack of studies on the supplementary online video components of subjects used in different delivery modes, lack of studies on the probable task effect on the adoption and engagement of online videos of tertiary students, lack of studies on types and purposes of videos integrated by lecturers, lack of studies on multigenerational individuals with different needs and intelligences, and the presence of explicit inconsistency between study findings.

In the first place, it is important to consider students' perceptions of the changes in educational aspects in parallel with technological innovations and different types of ICT resources. Integration of students' preferences through understanding their perceptions of these innovations into their learning environment may facilitate meeting individual learning needs. The results of some studies have revealed the effectiveness of different technological modes of instruction and the positive perception of students (e.g., Evans, 2008; Karal, Çebi, & Turgut, 2011; Rose, 2009). Exploring students' reasons for taking

online courses, Braun (2008) claims that the most prevalent ones are related to financial reasons, flexibility, and the ability to complete course assignments, readings, and other requirements from home. Jensen (2011, p. 298) also speaks of the 'almost universal access', 'increased flexibility', and 'preference among young adults' as the factors contributing to the appeal of online courses. Whether students fully employ core or supplementary online components of courses and individual tools, and whether they perceive these affordances as adding value to their educational experience and understanding has not been fully investigated and is still unknown.

Bearing the aforementioned general shortage of studies with the online video context in mind, a brief review of the literature also reveals that most of the studies on videos have been carried out on students who were either mostly in nursing or medical settings (Alliex & Das, 2010; El-Sayed & El-Sayed, 2013; Garrett-Wright & Abell, 2011; Jang & Kim, 2014; Logan, 2012; Miller, 2014; O'Flaherty & Timms, 2015; Wall Parilo & Parsh, 2014; Wang, Mattick, & Dunne, 2010; Woodham, Ellaway, Round, & Vaughan, 2015) or on video games (Bourgonjon, Valcke, Soetaert, & Schellens, 2010; Marino, Israel, Beecher, & Basham, 2013). Given this fact, and to the best of the researcher's knowledge, not a single study has been reported on Australian tertiary learners' online video use thus far. Therefore, the researcher intends to make a contribution in filling this vacuum by studying their perceptions and understanding of videos integrated into subjects. Furthermore, no studies have investigated Australian lecturers' types and purposes of videos used in their subjects. Hence, the research will provide deeper insights into the present situation

concerning video use among students and lecturers in a regional/rural location. Also of interest will be their exposure to technology and the required technology literacy. The study intends to highlight the challenges the sector faces as the aging work force in academia struggle with the new technological innovations. It also attempts to highlight the gap between the demands and expectations of the students and the skills and capabilities of the academics.

This study also intends to bridge the gap concerning the shortage of studies carried out on multigenerational individuals with different needs and intelligences. Accordingly, multiple intelligences (MI) may be an important influence on students' success in online learning (Lopez & Patron, 2012; Tyler & Loventhal, 2011). Identifying the weaknesses and strengths of students can potentially make them more independent (Coffield, Moseley, Hall, & Ecclestone, 2004; Diaz-Lefebvre, 2004; Lopez & Patron, 2012) especially in the online environment where the interaction between student-teacher is limited and requires learners to rely on more independent self-teaching techniques than previous student cohorts. According to Foong, Shariffudin, and Mislan (2012), the way of delivering the knowledge may not match the abilities of learners, leading to inefficient outcomes and learning failure of learners. Therefore, Foong et al. claim that to enhance learning and to overcome learning difficulties, learners should know their potential, strengths and weaknesses. To achieve effective learning in online settings, Felix (2005) posits that instructors need to consider both the cognitive process and the socio-constructivist process. Students who are aware of their own strengths and weaknesses

"can adjust their own cognition and thinking to be more adaptive to diverse tasks" (Amer, Barwani, & Ibrahim, 2010, p. 103) and, therefore, they can facilitate their learning.

Despite its potential to enhance teaching and learning, the use of MI seems to be ignored in higher education as "teaching and learning in tertiary institutions is often conservative and teacher centered, and privileges certain kinds of abilities over others" (Barrington, 2004, p. 432). In other words, it is not surprising to see that in this context, they have often failed to take into account different intelligences of students that they bring to their studies. According to some studies (e.g., Lopez & Patron, 2012; McKethan, Rabinowitz, & Kemodle, 2010), to date, no or little research has been conducted to determine the MI of online learners. Since online learners are exposed to a plethora of information on the net, this engagement in virtual environments may make their learning different (Dede, 2005). Thus, more research is required to understand the MI profile of online learners and their abilities to interact with others. In addition, it is worthwhile to investigate whether online learners have the same MI profile as their counterparts in blended and traditional face-to-face courses.

Individual needs and individual differences are other important areas which should be catered for in different learning modes and settings. The way learners learn is related to their needs and the prevailing conditions (i.e., motivational and engagement activities) in their learning environment. For instance, often online learners feel that they are left out of course activities and their individual needs are not considered (Tyler & Loventhal,

2011). To counter this, Gardner's MI theory could be a useful alternative as it has the capability to address some of these demands and to offer opportunities to meet individual needs. MI is not the only pedagogical approach to address issues of student individuality, but it takes different ways of learning into account. According to Tyler and Loventhal (2011), pedagogy and instruction through an MI perspective offers many advantages to increase the learning of students. For instance, they claim that offering some courses online requires a variety of MI to be utilized.

Considering MI as the palate, lecturers can find 'the right brush' and 'the right color' to increase learning outcomes and to meet individual needs ensuring success in online courses. Instructors need to understand learning preferences of students to integrate and apply appropriate tools and techniques, capturing all students into practice (Barrington, 2004; McCoog, 2007; Tyler & Loventhal, 2011). Since every student has a different set of developed intelligences and ways of gaining knowledge and also his/her own strengths and weaknesses, recognizing these sets can reveal how easy or difficult it is for a student to learn information presented in a specific manner (Tyler & Loventhal, 2011). Focusing on the strengths of particular multiple intelligences may encourage a larger number of students to gain the requisite experience (Barrington, 2004) as the ultimate goal for a successful integration of technology and multiple intelligences is to provide the most effective and well-organized setting for students' learning.

Furthermore, there is a compatibility between the MI and constructivism in the sense that it emphasizes 'where the student is at' should not be forgotten. In this sense, MI goes further, encompassing an explicit and wider range of students' abilities and intelligences (Barrington, 2004). To Gardner, intelligence is "the ability to solve problems or to fashion products that are valued in one or more cultural settings" (2006a, p. 48). This view of intelligence is inclusive as "it is not culture-bound, and accounts for differences in time and place" (Barrington, 2004, p. 422). It is also worth mentioning that along with the growing reputation of the MI theory, there has been a body of controversy and criticism lodged against the theory (e.g., Akpunar & Dogan, 2011; Gottfredson, 2004; Willingham, 2004). Most of the critiques have arisen as Gardner has attacked the standard notion of intelligence as a single capacity with which an individual is born. The others, for instance, are 1) lack of empirical support (Gottfredson, 2004); and 2) lack of solid research to support the existence of MI in the classroom (Willingham, 2004). In this regard, the researcher is aware of the criticisms and attempts to consider the major criticisms and the possible misconceptions about the theory.

Perhaps the question that may come to mind at this point is why different intelligences and needs are important in learning and teaching. In fact, discussion of MI and the way it can help learners is closely tied with individual differences. In other words, MI is believed to be highly related to differences between individuals and their needs (e.g., Armstrong, 2009; Gardner, 2004, 2011a). As noted by Myers et al. (2003), considering the individual differences of students may assist educational centers with developing effective and

meaningful educational programs. Likewise, Felder and Brent (2005) state that the more educators understand the learners' differences, the better they can meet their diverse learning needs. Individuals who identify their own intelligences may develop coping strategies to balance their weaknesses and take advantage of their strengths (Armstrong, 2009). In addition, employing a purposeful media like various types of videos within a subject could increase and support learning styles and intelligences of students. Green and Tanner (2005) for instance, claim that visual-spatial learners favour diagrams, pictures, video clips, tables and charts. Dede et al. (2002) also posits that utilizing each media for educational purposes, brings about a distinct type of communication that asks for and possibly undercuts some individual learning styles and thus intelligences.

Despite the importance of individual differences, many existing inventories which claim to elicit individual differences are from the pre-Internet era. They do not take into account the impact of the Internet and new technologies on the Net-generation's culture and education as well as their individual differences. Indeed, they are suffering from a lack of attention in the modern era. Internet learning described in the above-mentioned literature and its impacts on learners and the process of learning is yet to be fully investigated.

In summary, internet communication offers learning differences in network and face-to-face environments. Understanding variables about learning perceptions, needs, and individual differences is necessary. Additionally, it is difficult to generalize the results of studies which have used different instruments and relied solely on quantitative research

methods. These studies limit results through a focus on numerical descriptions rather than detailed narratives and usually provide less detailed accounts of styles of learning and perception. Aiming at filling in the aforementioned vacuums in the literature and clarifying certain uncertainties, the present study is an attempt to further our understanding of the online video usage that tertiary students with different talents and needs employ within the different delivery modes. Moreover, there are no studies available to explain the implications of online video-assisted subjects at this study's university site or to explore perceptions of learning experiences and understanding. This study can offer important information for administrators, researchers, tertiary educators and planners about the efficacy of these technological innovations and contributes to the body of knowledge about the integration of video technologies in blended and online settings as well as the scholarship of teaching and learning at a post-secondary level. The findings can be very useful for academics and instructional designers who are planning media rich courses as they can reveal what the students are thinking and feeling about the use of videos in educational contexts. Academics seldom get access to this information. This feedback from the students can provide useful pointers to academics and faculty when they are designing and updating courses. In addition, this study investigates a specific practice, the use of multi-media and online tools in higher education. Universities around the world are spending a large amount of money on course development, including the growing area of online course delivery. Thus, this research into the efficacy of the use of videos incorporated into blended and online teaching materials can provide important findings to guide these pedagogical practices in higher education.

1.5 Theoretical and Conceptual Framework of the Study

The theoretical perspective of this study is underpinned by three theories, namely, the theory of Multiple Intelligences (MI), the theory of Constructivism, and the theory of Connectivism. These theories are used to investigate students' and lecturers' perceptions of the use of video affordance materials (VAM) to facilitate students' experiences, engagement and learning outcomes in an online mode of communication, with respect to the effect of multiple intelligences.

The first theory, the theory of MI, was introduced by Howard Gardner in 1983 in response to the backdrop of the educational system that was heavily biased and inclined toward a one-dimensional view of assessing verbal-linguistic and logical-mathematic intelligences through the traditional intelligence test or Intelligence Quotient (IQ) tests. The tests were focused too much on the aforementioned intelligences and ignored other abilities such as musical-rhythmic, bodily-kinesthetic and naturalist intelligences. Questioning the traditional view of intelligence, Gardner developed a multifaceted view of human intelligence and the existence of other relatively independent intelligences. Accordingly, Gardner posits that everyone has the capability to know the world in at least nine different ways which are labelled human intelligences (Gardner, 2006a, 2011b). To Gardner (2011a), "these [intelligences] are relatively independent of one another, and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures" (p. 9). Gardner's initial list of seven intelligences were introduced in 1983. The preliminary classification includes verbal-linguistic, logical-mathematical, visual-spatial,

bodily-kinesthetic, musical-rhythmic, interpersonal, and intrapersonal intelligences. Later, two more intelligences, naturalist and existential, were added to the list (Gardner, 1995a, 1999a, 1999b, 2006a). Veenema and Gardner (2006a) believe that "these intelligences constitute the ways in which individuals take in information, retain and manipulate that information, and demonstrate their understandings (and misunderstandings) to themselves and others"(p. 76).

The second theory, the Constructivism theory of learning is based on the premise that learning takes place in contexts and learners construct or form their knowledge and understanding as a function of their interaction with the environment. The theory derives basically from Piaget's work that emphasizes the learner's internal, cognitive or conceptual development. Constructivism is defined as "a psychological and philosophical perspective contending that individuals form or construct much of what they learn and understand" (Schunk, 2012, p. 229). In a literal sense, Constructivism looks at knowledge as the natural consequence of a constructive process. Constructivists do not look at knowledge as mind-independent that can be mapped onto a learner. In the constructivist perspective, learners' knowledge of the real world derives from their interpretations and meanings of their own experiences. As such, they state that "humans *create* meaning as opposed to *acquiring* it" (Ertmer & Newby, 2013, p. 55). Thus, learners construct knowledge for themselves by connecting the new information with already existing cognitive knowledge and experience (Pritchard & Woollard, 2010). This theory stipulates the importance of learners' interaction with their social and physical environment; so, the

learner is considered central in the learning process while the teacher is seen as a facilitator or guide, who provides the conditions for invention rather than giving ready-made knowledge (Boghossian, 2006; Papert, 1996; Simina & Hamel, 2005; Wang, 2011). Accordingly, learners take responsibility for their own learning, either individually or collaboratively, and make their own meanings. Consequently, learners are considered as active participants in the learning process pursuing meaning from their experiences (Boghossian, 2006).

While Piaget (1978) stresses an individual's mental construction of knowledge, Vygotsky (1978) highlights the key impact of sociocultural aspects on individuals' learning. Vygotsky stresses the effect of knowledge constructed on learners' active and reflective thinking (Palincsar, 2005). Such individually constructed knowledge triggered the emergence of social constructivism. This establishes a more active part for learners in which they are considered as members of a community making their own knowledge construction.

Vygotsky's theory of social constructivism stresses the interrelatedness of three factors as the key to human development, namely, the interpersonal (social), cultural–historical, and individual (Tudge & Scrimsher, 2003). The theory best expresses the combination of social and individual aspects of learning (Simina & Hamel, 2005). To social constructivists, knowledge is a human creation that is constructed socially and culturally (Ernest, 1999; Gredler, 1997; Pritchard & Woollard, 2010). According to this theory,

knowledge is socially situated and is constructed through reflection on one's own thoughts and experiences, as well as other learners' ideas (Siegler, 1998). Social constructivism also highlights "knowledge [as being] constructed in response to social interactions through social negotiation, discourse, reflection, and explanation" (Rock & Wilson, 2005, p. 79). Meaning and understanding are created through individuals' social interactions with each other and with their environment. As such, learning is considered as a social process. It does not take place only within an individual, nor is it a passive process formed by external forces (Derry, 1999; McMahon, 1997; Pritchard, 2009; Pritchard & Woollard, 2010). Pritchard and Woollard (2010) state that the theory underlies the emphasis on "the role of others and all forms of social interaction in the process of constructing knowledge and understanding" (p. 8). Thus, the theory puts more emphasis on the social environment as a facilitator of development and learning (Schunk, 2012). Consequently, learners become actively involved with content through social interactions and manipulation of materials.

The emergence of the technological advances and information explosion in the current age, have changed the way that we acquire information. Technological advances have facilitated learning and teaching for people separated by time and place. As such, learning is not under the control of the learners and they need to learn how to learn and evaluate the new information. In this regard, learning theories and needs should be reflective of underlying social environments. In addressing the above-mentioned learning theories, while useful, do not adequately tackle the requirements of the digital age, which take the

affordances brought about by the Internet into consideration. The theories lack guidance in reflective thinking skills, knowledge construction, and cognition sharing through social interaction taking place among learners and their knowledgeable peers. Therefore, new methods in education and learning contexts are required. According to Siemens (2005) and Siemens and Tittenberger (2009), it seems necessary to have a theory for learning in an age defined by networks to account for the enhancement of the learning materials in the networked world. As such, Siemens (2005) asserts that the emergence of technology has reorganized how we live, communicate, and learn. Hence, he developed the notion of connectivism as a learning theory for the digital age.

Connectivism, the third theoretical perspective, claims to provide a theory for learning in the digital era and accounts for the connection and socialization affordances brought about by the Internet. Indeed, it gives the learners the chance to connect to each other via social networking or collaboration affordances. According to this theoretical perspective, knowledge and cognition are distributed across networks of people and technology (Siemens & Tittenberger, 2009). They view learning as the process of connecting, growing, and navigating those networks. In other words, learning is enhanced and motivated when a learner connects to and feeds information into a learning community. Siemens (2005) argues that a community is formed when learners with similar interests join each other. The community then allows for interaction, sharing, dialoguing, and thinking together. Accordingly, Kop and Hill (2008) assert that in this theory, knowledge can be circulated across an information network and it can be kept in various digital

formats. As such, the theory is defined as the use of social networking in learning and knowledge (Pettenati & Cigognini, 2007). Connectivism as pointed out by Siemens (2006), proposes that people learn through the process of creating networks that could be internal or external. Internal networks account for understanding that occurs in the human mind, while external networks connect new knowledge and encompass different nodes such as people, organizations, libraries, books, and websites. Connection is the basic element of Connectivism that requires learners' interaction with elements that go beyond the learning practice in the classroom setting, and allows real-life application of the practiced elements. The above-mentioned points are included in the theoretical and conceptual frameworks for this study (see Figures 1&2).

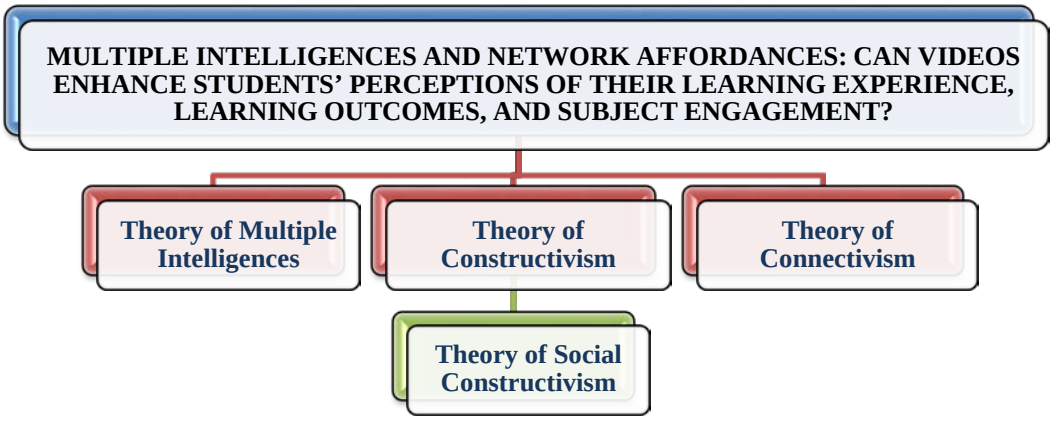


Figure 1-1: Theoretical Framework of the Study

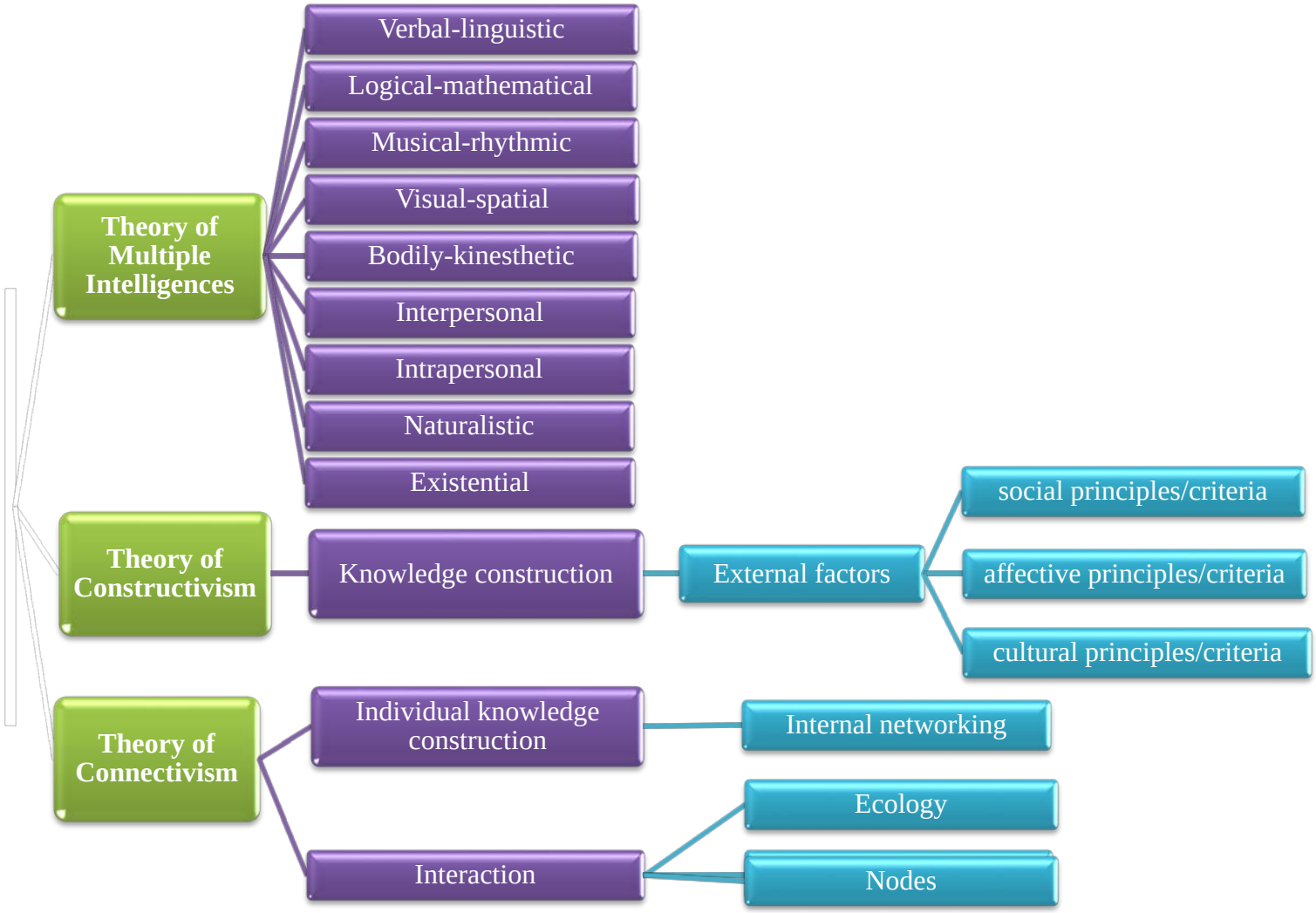


Figure 1-2: Conceptual Framework of the Study

1.6 Research Objectives

The general objective of this study is to investigate the students' and lecturers' perceptions of the use of online video affordance materials (VAM) to facilitate students' experiences, engagement and learning outcomes in an online mode of communication, with respect to the effect of multiple intelligences. Hence, the specific objectives of the study are:

1. (a) To determine the relationship between students' MI scores and their age and gender,

(b) To explore the relationship between the students' MI scores and their learning experience and motivation,

2. To identify lecturers' perceptions of different modes and purposes for online videos,

3. To detect lecturers' perceptions of the advantages and disadvantages of the flipped classroom.

4. To investigate how and why students use online videos and how these might influence engagement in their subjects; and what are the different modes and purposes for the online videos,

5. To determine the multiple intelligences that students perceive as important in a video-assisted subject,

6. To explore students' perceptions of the educational value of online videos and their learning experiences within the subject,

1.7 Research Questions

Based on the objectives, the study seeks to answer the following research questions:

1. **(a)** Is there any relationship between the students' MI scores and their age and gender?

(b) Is there any relationship between the students' MI scores and their learning experience and motivation?

Questions asked of Lecturers in the interviews:

1. What different modes and purposes are there for online videos?

2. What are the lecturers' perceptions of the advantages and disadvantages of the flipped classroom?

Questions asked of Students in the interviews:

1. How and why do students use online videos and how do they influence subject engagement?

2. What multiple intelligences do students perceive as important in a video-assisted subject?

3. What are the students' perceptions of the educational value of online videos and their learning experiences within the subject?

1.8 Significance of the Study

It is hoped that the results of this study might provide curriculum planners, system designers, and educators with insights into how learners perceive and experience the use of online video affordance materials across different modes and how to fulfill the learner expectations more effectively through awareness of MI. The results of this study may lead teachers to provide opportunities for each individual to develop a consciousness of how their mind works and therefore teach towards the learning needs of all students in the classroom. This will help them to see that everyone has areas of strength and areas of challenge, and that it is worthwhile to celebrate their success and failure as a community of accomplished learners.

1.9 Definition of Key Terms

Within the scope of this study, the important key terms are as follows:

Asynchronous Interaction

A type of communication that does not require students being online at the same time. Discussion boards, modules, forums, and emails are some examples of asynchronous interaction.

Blended Learning

The integration of traditional face-to-face and online learning environments with the objective of optimizing the classroom experience so as to meet students' learning needs through the innovative use of technology and ICT. According to Allen and Seaman (2015), in this approach, between 30 and 79 percent of the course content is delivered online.

Connectivism

An emerging theory for learning in the digital era which was proposed by Siemens (2005) and accounts for the connection and socialization affordances brought about by the Internet.

Constructivism

Looking at knowledge as the natural consequence of a constructive process, this theory is based on the premise that learning takes place in contexts and learners construct or form their knowledge and understanding as a function of their interaction with the environment. Therefore, learners construct knowledge for themselves by connecting the new information with already existing cognitive knowledge and experience.

Data Saturation

The point at which no emerging new categories, themes or explanations are forthcoming from expanding the sample size or settings.

Digital Literacy

Considering the breadth of definitions for the term ‘digital literacy’, this study considers the term as “things that digitally literate people produce (blogs, wikis, podcasts); or activities that digitally literate people can engage in such as digital storytelling, social networking, and webpage creation” (O'Brien & Scharber, 2008, p. 66). According to Rhodes and Robnolt (cited in Shin & Seger, 2016) digital literacy encompasses a range of literacies such as information, media and visual literacies.

Engagement

Together with motivation, engagement is viewed as a significant factor to augment students’ learning outcomes. Accordingly, Newman (cited in Shernoff, 2013) defines student engagement in an academic setting as “the [student’s] psychological investment in and effort directed towards learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote” (p. 48). In addition to the above-mentioned definition, this study looks at the term engagement as interactions and dealing with the course material.

Flipped Classroom Approach

The move to a flipped classroom approach has created a number of challenges for educators because of a lack of consensus on what exactly this flipped model entails. This buzzword has been interpreted differently at the university level, in how it is structured and in the way that it has been used. Some people are interpreting it as no lectures and that some form of online material replaces the lecture and that the tutorial then becomes your workshop space. In this study, the term flipped classroom is defined as an educational technique that lecturers use to record their lectures, which provides students the opportunity to view lectures at home thus freeing class time for deeper discussion-based face-to-face learning and understanding. Indeed,

the main component of this method as defined by Love, Hodge, Corritore, and Ernst (2015) is to reverse "what happens *in* the classroom with what happens *out* of the classroom" (p. 745) as compared with a traditional lecture-based classroom.

Inter-rater reliability

A procedure for assessing dependability (reliability) of ratings that involves observations and recording scores made by two or more individuals of an individual's behavior, and then comparing the observers' scores to determine whether they are similar.

Motivation

Although there are many definitions associated with motivation and its intrinsic and extrinsic forms, this study looks at motivation activating behavior. Specifically it considers the affective and cognitive influences that lead to positive achievement outcomes. Thus, the term is viewed as a pre-requisite element necessary for students' engagement in their learning and learning outcomes.

Multiple Intelligences

The theory of multiple intelligences which was developed by Howard Gardner in 1983, refers to a learner-based philosophy that exceeds the traditional view of intelligence as being focused on verbal-linguistic and logical-mathematical intelligences into a multifaceted human intelligence. Accordingly, Gardner posits that everyone has at least varying degrees of nine different intelligences including verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal, and intrapersonal, naturalist, and existential intelligences.

Online Learning

In this study, online learning is defined as "an open and distributed learning environment that utilizes pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction" (Dabbagh, 2005, p. 31).

Perception

The term represents the participants' individual interpretation of their own attitudes towards learning. For the purpose of this study, the terms perceptions, attitudes, and beliefs are loosely used for each other.

Satisfaction

Students' satisfaction is defined by Lapoint and Gunawardena (cited in Keengwe & Schnellert, 2014) as "an affective construct that is often considered to be a predictor of learning outcomes" which indicates "the degree of learner reaction to their learning experience in a particular course" (p. 61). Thus, the current study looks at the concept as students' reactions to their learning experience with the subject and academic performance.

Social Constructivism

Putting more emphasis on the social environment as a facilitator of development and learning, this theory posits that learners become actively involved with content through social interactions and manipulation of materials.

Synchronous Interaction

Simultaneous communication among people that happens in real-time through Skype, online live classrooms, microphones, telephone calls, and web cameras.

The Net Generation Students

The term 'Net Generations' that has been used interchangeably with other terms such as Net-Gen, Net-Geners or Millennials, was coined in 1997 by Tapscott (2009) and refers to the young people born between January 1977 to December 1997. They are characterized as technologically advanced, diverse, extremely social, education oriented, self-confident, multitasking, and impatient.

Traditional Face-to-Face Learning

A mode of learning in which students are restricted to be present in one place in a particular time-moment to interact with their peers and academics.

Triangulation

Implementing various data-collection techniques, theories, researchers, methodologies or combinations of these four categories and comparing the results to ensure that they are well supported. In this study, the triangulation by data, method and theory was chosen.

1.10 An Overview of the Chapters

This research is organised into 8 Chapters and a summary of the chapters is provided below.

Chapter One gives an overview of the research. The chapter initially provides the background and purpose and then addresses the research problem, the underlying Theoretical and

Conceptual Framework of the Study. Afterwards, Research Questions and Objectives, Research Significance, and definition of Key Terms are expressed.

Chapter Two concerns itself with a brief review of the learning theories of Behaviourism, Cognitivism, Constructivism, Social Constructivism, Multiple Intelligences, Constructionism, and Connectivism, their pros and cons and an elaboration on the theoretical framework guiding the research which is underpinned by three theories, namely, the theory of Multiple Intelligences (MI), the theory of Constructivism, and the theory of Connectivism.

Chapter Three looks at the emergence of Web 2.0, social networking tools, and the rise of different generations in higher education. Next, it reviews the literature pertaining to multiple intelligences, followed by the literature on the perceptions of online videos.

Chapter Four discusses the research methodology employed in the study. The chapter explains the methods used to collect data, how they are adopted, and for what purposes. Furthermore, the reliability and validity of the methods, instruments and techniques utilized for the data collection, and data analysis are also described.

Chapter Five reports the findings of the students' data analysed quantitatively. This chapter builds on the previous chapter which detailed the methods and instruments used in the study. The chapter reports the quantitative results of the study collected through the use of online surveys, McKenzie's Multiple Intelligences Inventory and the researcher-made questionnaire.

Chapter Six focuses on the lecturers' results collected through semi-structured in-depth interviews. As such, the chapter includes lecturers' perceptions and attitudes of different video types and purposes, as well as the advantages and disadvantages of the flipped classroom approach.

Chapter Seven builds on the previous chapter and reports on the data from semi-structured in-depth interviews with students which were conducted to complement and illuminate the data based on the questionnaires. This allowed for further clarification from the participants. Furthermore, it allowed the researcher to tap into their perceptions and understanding of videos utilized through the subjects they are enrolled in, their dominant preferences, and talent areas.

Chapter Eight summarizes and discusses the overall findings of the study in accordance with the research questions. It then addresses the implications and limitations of the study and gives suggestions for future studies.

CHAPTER 2

LITERATURE REVIEW: LEARNING THEORIES

2.1 Introduction

The general aim of the current study is to investigate the students' and lecturers' perceptions of the use of online video affordance materials (VAM) to facilitate students' experiences, engagement and learning outcomes in an online mode of communication, with respect to the effect of multiple intelligences. This should help to clarify whether there is a relationship between students' multiple intelligences (MI) scores and their age, gender, learning experience and motivation. It also seeks to answer how and why students use online videos, and how this might influence engagement in the subjects. Furthermore**,** lecturers' perceptions of different modes and purposes for online videos and the advantages and disadvantages of the flipped classroom approach are investigated. The final interest of the present research is to show which multiple intelligences students perceive as important in a video-assisted subject, and to explore students' perceptions of the educational value of online videos and their learning experiences within the subject. This chapter concerns itself with a brief review of learning theories and the theoretical framework of the study.

2.1 Learning Theories

The way that learning has been defined as well as the belief about the way that it happens have vital implications in facilitating changes in learning and what learners want to know or do. As addressed by Ertmer and Newby (2013), learning theories inform various teaching techniques and strategies that can be applied in "facilitating learning as well as a foundation for intelligent strategy selection" (p. 43). This section attempts to briefly explain the most relevant learning theories in order to describe the learning developmental stages that individuals undergo. The

researcher attempts to provide a brief but comprehensive comparison and explanation of these viewpoints, and where applicable their differences and similarities.

2.1.1 Behaviourism

As the result of a significant historic change in the nature of perception in different fields in the early twentieth century, a systematic study of learning theories began with functionalism and structuralism. The new perception encompassed a rigorous understanding of concrete features that can be clearly observed and classified accordingly. However, these early theories were primarily concerned about the interior, mental processes of individuals' thinking and soon became superseded. Although their significance has faded today, functionalism and structuralism signified two of the most essential intellectual strands especially in the 1940s and 1950s.

Believing that methods and schools of thought dealing with the mind were not scientific, Watson (1913) focused on the role of psychology as an authentic natural science and argued against the effectiveness of both functionalism and structuralism and coined the term 'Behaviourism'. In this regard, he thought about structuring psychology as a science along the lines of the physical sciences that study and inspect the observable phenomena. As such, he looked at behavior as an appropriate construct for psychologists to study and measure scientifically. Watson's theory of classical conditioning or Behaviorism was inspired by the works of Pavlov and his dog experiments. In particular, Pavlov's conditioning model looked to Watson as the most appropriate model to make a science of human behaviour (Schunk, 2012). Inspired by Pavlov's model of precise measurement of observable behaviors, Watson tried to take advantage of the model by considering different learning types and personality characteristics.

In Behaviorism, learning is explained in terms of observable environmental events and mental processes (e.g., beliefs, feelings), and is not required to explain the acquisition and generalization of behavior. In short, the theory concentrates on external and observable actions and behaviors (Reys, Lindquist, Lambdin, & Smith, 2009; Scales, Briddon, & Senior, 2013). Behaviorism views learning as "a change in the rate, frequency of occurrence, or form of behavior or response, which occurs primarily as a function of environmental factors" (Schunk, 2012, p. 21). In this view, Behaviorists attempt to characterize learners as being reactive to environmental events which is contrary to taking active roles in realizing the environment (Ertmer & Newby, 2013). Thus, the learning could be achieved when the proper response is elicited from the learner to whom an environmental stimulus has been presented. As such, learning happens via conditioning which ultimately takes the learners' attention and changes their behaviour (Lau, 2014). So, it puts more pressure on teachers as they need to arrange the environment in which learners can properly respond to stimuli. Thus, the theory is considered more teacher-centered.

Despite the importance of Behaviorism, several problems are left unanswered. For instance, two criticisms listed by Moore (2011) are: 1) the apparent spontaneity of behaviour; and 2) the variability of behaviour. In the first issue, Moore expands the problem by stating that the development of some responses have been evoked without a characteristic stimulus. In the latter, he argues that "even when a characteristic stimulus preceded responses, the topography and frequency of the responses often differed significantly" (p. 451). Another problem with this theory is that it fails to take mental processing into account and is just built on observable behavior. Further, it does not look deeply into the learning processes and looks at the problem superficially. As a result of such problems, many theorists and researchers in the late 1950's began seeking an alternative learning theory by shifting away from behaviourism that relies on

the behavioural sciences which provide an explicit and observable behavior, and moved to address more complex cognitive processes such as thinking and problem solving.

2.1.2 Cognitivism

The shift away from environmental factors (in behaviourism) towards the human factors led to the advent and popularity of Cognitive psychology in the 1970s. Cognitive psychology stresses individual's information processing as a principal cause of learning. The focus of teaching in this theory changes from teacher-centered in Behaviorism to learner-centered. The cognitive school of learning emphasises the acquisition of knowledge and skills, the development of mental structures, and information processing (Ertmer & Newby, 2013; Schunk, 2012). In this approach, learning is viewed as an internal, mental phenomenon that is inferred from what individuals think, perceive, learn, say and remember about information. As such, the main theme in cognitive psychology is the mental processing of information which includes the acquisition, construction, motivation, and thinking. From the cognitive perspective, learning is an active and constructive process that includes individuals' conscious effort to understand new input material and to use it purposefully via linking them to their prior knowledge. In other words, cognitive theory stresses meaningful learning by considering the learners' perceptions of their learning environment as well as themselves. Solso (1979) defines cognitive psychology as follows.

> Cognitive psychology deals with how we gain information of the world, how such information is represented and transformed as knowledge, how it is stored, and how that knowledge is used to direct our attention and behavior. It involves the total range of psychological processes—from sensation to perception, pattern recognition, attention, learning, memory, concept formation, thinking, imaging, remembering, language, emotions, and developmental processes. (p. 1)

Cognitivism is also defined as "the scientific study of mental processes such as learning, perceiving, remembering, using language, reasoning and solving problems" (Pritchard, 2009,

p. 17). The philosophical assumption underlying this theory is like behaviorism and is mainly objectivistic which relies more on the real and external environment to the learner and puts more emphasis on the role of environment in facilitating the learning (Ertmer & Newby, 2013). However, these theories differ in perceiving the learner's active nature. For instance, the importance of mental processes and activities in cognitive learning theory leads to a response that admits the mental planning and goal-setting process.

Despite the leading mainstream of cognitivism and its implication for most of the twentieth century, the theory had yet to prove itself as it had raised critics in fulfilling expectations. For instance, Williams and Burden (1997) contend that cognitivism supporters place "little or no emphasis upon the ways in which individuals seek to bring a sense of personal meaning to their worlds" (p. 21). To address such deficiencies, the theorists and researchers began moving towards constructivism.

2.1.3 Constructivism

The Constructivism philosophy of learning derives from Piaget's work that emphasizes the learner's internal, cognitive or conceptual development. Constructivism is defined as "a psychological and philosophical perspective contending that individuals form or construct much of what they learn and understand" (Schunk, 2012, p. 229). Pritchard and Woollard (2010) describe constructivism as a theory that equates learning with constructing and understanding of the environment from experience. They also state that learners "select and transform information from past and current knowledge and experience into new personal knowledge and understanding" (Pritchard & Woollard, 2010, p. 8). In this perspective, learners construct knowledge through interaction with the environment. In other words, they construct knowledge by associating new information with already existing cognitive knowledge.

Constructivism looks at knowledge as the natural consequence of a constructive process. As such, learning is considered as an active process of constructing knowledge. This theory argues that "learning happens best when it is self-directed" (Papert, 1996, p. 45). Accordingly, Papert asserts that constructivism criticizes the traditional teaching which is based on "a model of a pipeline through which knowledge passes from teacher to student" (p. 45).

In this theory, learning is viewed as an in-depth understanding that happens through constructing and developing one's knowledge by actively creating, interpreting, questioning and problem solving (Marlowe & Page, 2005). In short, learning occurs in contexts and learners construct and understand what they learn as a " function of their experiences in [various] situations" (Schunk, 2012, p. 491). The learner is considered central in the learning process while the teacher is seen as a facilitator or guide, who provides the conditions for invention rather than giving ready-made knowledge (Boghossian, 2006; Papert, 1996; Simina & Hamel, 2005; Wang, 2011). The role of the teacher is to enhance understanding of what learners have brought to the classroom, and to assist learners to construct new knowledge through interaction with the social and physical environment. Consequently, constructivism is supporting a student-centered learning approach in which the learners play a vital role in teaching and learning.

Constructivism philosophy of learning has emerged as a prominent learning approach since the 1980s, although it is not a new approach and has a long history to learning. The origin of recent constructivism as addressed by Perkins (1992; cited in Ertmer & Newby, 2013), has "multiple roots in the philosophical and psychological viewpoints of this century, specifically in the works of Piaget, Bruner, and Goodman" (p. 55). Piaget and Vygotsky are two influential names associated with the rise of constructivism. Their work on the learner's cognitive development

and the way that knowledge is built (social cognitive development) forms the core of this theory. There are many different types of constructivism, such as cognitive, critical, radical, and social, which share the same core idea that learners' construct knowledge. However, two important strands among them are: 1) cognitive constructivism which was led by Jean Piaget (1978), and 2) social constructivism that was founded by Vygotsky (1978).

2.1.4 Social Constructivism

While Piaget (1978) concentrates on an individual's mental construction of knowledge, Vygotsky (1978) puts greater emphasis on the social context of the learning environment. He stresses the effect of constructed knowledge on the learners' active and reflective thinking (Palincsar, 2005). Consequently, the leading difference between the two strands of cognitive and social constructivism is a matter of priority: the priority of cognitive procedures or social interaction. Whereas Piaget highlights the computational processes happening inside the head, Vygotsky gives more priority to social factors. As such, he looked at individuals' cognitive development as a function of cultural, historical and social interaction rather than of knowledge construction. Such a view led to the emergence of social constructivism.

Social constructivism puts more emphasis on the social environment as a facilitator of development and learning (Schunk, 2012). As such, learners become actively involved with content through social interactions and manipulation of materials. Vygotsky asserts that learning environments should contain guided interactions allowing learners to reflect on inconsistencies and change their ideas through communication. According to Pritchard and Woollard (2010), the theory underlies the emphasis on "the role of others and all forms of social interaction in the process of constructing knowledge and understanding" (p. 8). Since learners take part in a wide "range of joint activities and internalize the effects of working

together, they acquire new strategies and knowledge of the world and culture" (Palincsar, 2005, p. 290).

Through the influence of constructivism and Piaget's theory of cognitive development on teaching and learning, another progression of thought emerged as Gardner's theory of multiple intelligences and framed around metacognition. Providing an alternative glimpse at how learning occurs has closely linked these theories (Constructivism and Multiple intelligences). Although the MI theory is a new field of brain-based research encompassing a wider range of talents and intelligences, they both emphasize 'where the student is at'. Owing to Piaget's interesting and prevalent arguments about general structures of the human mind, Gardner adheres to understand how learners can best learn new concepts, as addressed below, based on their diverse individual differences.

2.1.5 Multiple Intelligences Theory

Traditionally, the educational system was greatly biased toward a one-dimensional view of assessing verbal-linguistic and logical-mathematic intelligences. In this view, the abilities of the people were assessed through the traditional intelligence test or Intelligence Quotient (IQ) tests that were based on the Stanford-Binet test. The Stanford-Binet test, developed by Binet-Simon in 1904, focused on the IQ test which was inclined heavily towards the verbal-linguistic and logical-mathematical intelligences, ignoring other types of human intelligences. As such, intelligence was viewed as "a single, unchanged, inborn capacity" (Richards & Rodgers, 2014, p. 230). Simply put, the traditional IQ test as addressed by Gould (cited in Baum, Viens, & Slatin, 2005), "has a long history of misuse in the service of racist analyses of intelligence and as "evidence" for the lesser intelligence or inferiority of certain groups (p. 7). Consequently, recognizing different kinds of minds by the cognitivists opened up massive pedagogical

opportunities to recognize students' diversity and to understand their *specific* minds in many different ways within an educational setting (Gardner, 2006a).

Challenging the backdrop of the traditional view of intelligence, Gardner introduced the theory of multiple intelligences (hereafter MI theory) in 1983. The MI theory refers to a learner-based philosophy that exceeds the traditional view of intelligence as being focused on verbal-linguistic and logical-mathematical intelligences into a multifaceted human intelligence and notes the existence of other relatively independent intelligences (Gardner, 2011b; Richards & Rodgers, 2014). Accordingly, Gardner posits that everyone has the capability to know the world in at least nine different ways which are labelled human intelligences (Gardner, 2006a, 2011b). Gardner (2011a) believes that "there exist some intelligences, that these are relatively independent of one another, and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures" (p. 9). Gardner's theory is concerned with the individual's learning differences, strengths and combinations of intelligences where he argues "the ways in which such intelligences are invoked and combined to carry out different tasks, solve diverse problems, and progress in various domains" (Gardner, 2011b, p. 12). However, he states that these intelligences can be enhanced through practice and training. MI thus can help educators to identify an extensive spectrum of students' competencies. They also make "learning personal, purposeful, meaningful and relevant and give the brain reason to pay attention, understand and remember" (Spillane, 2008, p. 147). In short, Gardner recommends recognizing and developing all of the varied intelligences and their combinations in order to have a better opportunity to deal with the many difficulties faced, and to feel more competent and engaged in working with a broader community (Gardner, 2006a).

Gardner's MI theory is not the first theory to tackle intelligence. In fact, the notion of 'intelligence' was considered in ancient times when it was believed that the mind resided in some organs (e.g., in the heart, or in the liver) and has been discussed in a growing number of recent theories such as Spearman's "g" factor or Guilford's Structure of the Intellect (Armstrong, 2009). However, Gardner, more so than other theorists, has questioned the traditional notion of intelligence as a single entity and has developed a broader view of the term 'intelligence'. Further, he has attempted to broaden the scope of human potential beyond the restrictions of the traditional IQ. To Gardner, intelligence is "a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (Gardner, 1999b, pp. 33-34). Further, Armstrong (2009) calls the MI theory as a *cognitive* model that unlike other process-oriented models aims to explain the way in which individuals use their intelligences to fashion products and solve problems and how their minds operate on the *contents* such as numerical patterns and persons. Although some studies have related MI theory to learning style, it is worthy to mention that Gardner differentiates the 'MI theory' from the concept of 'learning style' and states that "the concept of *style* designates a general approach that an individual can apply equally to every conceivable content. In contrast, an *intelligence* is a capacity, with its component processes, that is geared to a specific content in the world (such as musical sounds or spatial patterns)" (Armstrong, 2009, p. 17; Gardner, 1995b, pp. 202-203). In developing his theory, Gardner used the following eight criteria to identify and classify the potential intelligences:

1. The potential of isolation by brain damage
2. An evolutionary history and evolutionary plausibility
3. An identifiable core operation or set of operations
4. Susceptibility to encoding in a symbol system
5. A distinct developmental history, along with a definable set of expert "end-state" performances
6. The existence of idiot savants, prodigies, and other exceptional People
7. Support from experimental psychological tasks
8. Support from psychometric findings (Gardner, 1999b, pp. 36-40)

Using these criteria as the primary means to identify a set of intelligences led to the initial list of seven intelligences in 1983. Gardner's preliminary classification included verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical-rhythmic, interpersonal, and intrapersonal intelligences. Later, two more intelligences, naturalist and existential, were added to the list (Gardner, 1995a, 1999a, 1999b, 2006a). Veenema and Gardner (2006a) believe that "these intelligences constitute the ways in which individuals take in information, retain and manipulate that information, and demonstrate their understandings (and misunderstandings) to themselves and others"(p. 76). To Gardner, the primary list of the nine intelligences can be rearranged. However, he points out that he has become very conservative/tentative about the possibility of additional intelligences (Armstrong, 2009; Gardner, 2006a) due to the eight certain criteria that an ability needs to meet before being considered as an 'intelligence'. As such, he looks at intelligences "as a mental chemistry set" and states that "it is desirable to explain as many human capacities as possible through a combination of the existing elements rather than through the creation of a new one" (Gardner, 2006a, p. 28). In fact, Gardner developed the list of the nine intelligences, as bona fide intelligences, after deciding that they fit each or most of the eight criteria. Thus, adding other proposed intelligences, by individuals other than Gardner, need to meet and satisfy the aforementioned set of criteria. Armstrong (2009) lists the proposed intelligences as "spirituality, moral sensibility, humor, intuition, creativity, culinary (cooking) ability, olfactory perception (sense of smell), an ability to synthesize the other intelligences, and mechanical ability" (p. 17). A full description of the above-mentioned intelligences is provided in the following.

2.1.5.1 Verbal-linguistic intelligence

Verbal-linguistic intelligence involves the capacity to use oral or written language and words effectively. This intelligence is defined by Richards and Rodgers (2014) as using language in

an innovative and special way. Adding to this definition, Armstrong believes that Verbal-linguistic intelligence involves the ability to use the syntax, semantics, phonology, and pragmatic dimensions of language or its practical use (e.g., rhetoric, explanation, mnemonics, and metalanguage). People who are strong in this intelligence are highly concerned with reading, writing and discussing their ideas and have a good knowledge of vocabularies. Poets exhibit this intelligence in its highest form as Gardner (2011a) states. He adds that poets need to have more clarity in using the core operation of language and thus they need to show,

> A sensitivity to the meaning of words, whereby an individual appreciates the subtle shades of difference between spilling ink "intentionally," "deliberately," or "on purpose." A sensitivity to the order among occasions, to violate them. At a somewhat more sensory level—a sensitivity to the sounds, rhythms, inflections, and meters of words—that ability which can make even poetry in a foreign tongue beautiful to hear. And a sensitivity to the different functions of language—its potential to excite, convince, stimulate, convey information, or simply to please. (Gardner, 2011a, pp. 81-82)

The preference or strength of this intelligence can also be found among writers, novelists, lawyers, editors, Librarians, speech pathologists, radio/TV announcers, journalists, language teachers, and interpreters (Armstrong, 2003; 2009; Baum et al., 2005; Gardner, 2006a, 2006b; Richards & Rodgers, 2014).

2.1.5.2 Logical-mathematical intelligence

Logical-mathematical intelligence is typically characterized as the capacity 'to use numbers effectively' and 'to reason well' (Armstrong, 2009, p. 6) or the capacity to think logically (Richards & Rodgers, 2014). Armstrong (2009) also associates this intelligence with what we call the "sensitivity to logical patterns and relationships, statements and propositions (if-then, cause-effect), functions, and other related abstractions" (p. 6). As such, he concludes the logical-mathematical intelligence into the procedures of classifying, categorizing, generalizing, inferencing, calculating and testing. People with a strong propensity for this intelligence have

a keen sense about problem-solving, reasoning, using patterns and symbolic abstractions. According to Green and Tanner (2005), people with this intelligence like "factual input and often connect new input with what they have already learnt" and are mostly inclined to statistical information (p. 313). As such, Gardner (2011a) posits that "at the center of mathematical prowess lies the ability to recognize significant problems and then to solve them" (p. 151). Thus, the intelligence can be found when people are involved in situations requiring problem solving or meeting new challenges. This intelligence can often be found with doctors, engineers, programmers, scientists, mathematicians, statisticians, or logicians (Armstrong, 2003; 2009; Gardner, 2011a; Richards & Rodgers, 2014).

2.1.5.3 Visual- spatial intelligence

Visual-spatial intelligence encompasses the abilities to see the visual-spatial world accurately and to perform transformations upon those perceptions. As such, Armstrong (2009) defines this intelligence as "sensitivity to color, line, shape, form, space, and the relationships that exist between these elements…[that] includes the capacity to visualize, to graphically represent visual or spatial ideas, and to orient oneself appropriately in a spatial matrix" (p. 7). For this reason, Gardner (2011a) notes that,

> central to spatial intelligence are the capacities to perceive the visual world accurately, to perform transformations and modifications upon one's initial perceptions, and to be able to re-create aspects of one's visual experience, even in the absence of relevant physical stimuli. (p. 182)

This intelligence refers to the ability to understand the physical form accurately and effortlessly and to form a mental model of a visual world and operate using the model (Gardner, 2006a). Naming a few examples, architects, sailors, surgeons, sculptors, engineers, inventors and graphic artists have highly developed visual-spatial intelligence (Armstrong, 2003; 2009; Gardner, 2006a, 2011a; Richards & Rodgers, 2014).

2.1.5.4 Musical-rhythmic intelligence

Each of us have musical abilities to some extent. However, some individuals have a highly developed musical-rhythmic intelligence and are able to perceive, differentiate, transform, and express musical forms. In other words, they have a good ear for music. These people as Armstrong (2009) and Hoerr, Sally Boggeman and Wallach (2010) state, are sensitive to the rhythm, pitch (melody), and timbre (tone quality) of a musical piece. They have the capacity to think in music and enjoy tasks including "thinking about or using music, rhyme, or rap" (Green & Tanner, 2005, p. 313). As Gardner addressed, this intelligence emerged earlier than others and it includes the capacities of people "to discern *meaning* and *importance* in sets of pitches rhythmically arranged and also to produce such metrically arranged pitch sequences as a means of communicating with other individuals" (Gardner, 2011a, p. 103). Armstrong (2003) defines this intelligence as "the ability to understand and express components of music, including melodic and rhythmic patterns, through figural or intuitive means (the natural musician) or through formal analytic means (the professional musician)" (p. 13). Composers, conductors, performers, singers and music critics are some examples of individuals with a musical-rhythmic intelligence (Armstrong, 2003, 2009; Baum et al., 2005; Gardner, 2011a; Richards & Rodgers, 2014).

2.1.5.5 Bodily-kinesthetic intelligence

Individuals with a strong bodily-kinaesthetic intelligence know how to use their bodies in highly distinguished and experienced ways and how to work or handle objects with their hands, fingers or bodies skillfully. They are mostly hands-on learners with a keen sense to tactile activities. For instance, dancers use this intelligence to express their emotions through dance and other body movements or to convey their ideas through mime and charades. As such, Armstrong (2009) states that musically smart people are skilled in using their whole body "to

express ideas and feelings and facility in using one's hands to produce or transform things" (p. 7). He also adds that the intelligence encompasses some specific skills such as speed, strength, balance, flexibility, coordination, and dexterity. Thus, this intelligence encompasses the capacity to use mental abilities to coordinate body movements, revealing the related cooperation between mental and physical activities. Accordingly, Green and Tanner (2005) state that these people "enjoy physical manipulation tasks, such as dancing or acting something out" (p. 313). Artists, sculptors, mechanics, actors, dancers, athletes, surgeons, artisans, and craftspeople all exhibit highly developed bodily-kinesthetic intelligence (Armstrong, 2009; Gardner, 2006a, 2011a; Richards & Rodgers, 2014).

2.1.5.6 Interpersonal intelligence

Sensitivity toward others and the world around them is an apparent feature of individuals having a highly developed interpersonal intelligence. Simply put, they understand other people and love working with them. Armstrong (2009) defines this intelligence as the capacity "to perceive and make distinctions in the moods, intentions, motivations, and feelings of other people" (p. 7). Gardner (2011a) also defines this intelligence as "the ability to notice and make distinctions among other individuals and in particular, among their moods, temperaments, motivations, and intentions" (p. 253). Individuals can face this intelligence when they are part of a team effort which could be a sport activity, a church committee and so on. This intelligence as Armstrong (2009) asserts, requires both verbal and non-verbal communication cues and includes the "sensitivity to facial expressions, voice, and gestures; the capacity for discriminating among many different kinds of interpersonal cues; and the ability to respond effectively to those cues in some pragmatic way (e.g., to influence a group of people to follow a certain line of action)" (p. 7). Teachers, clinicians, salespeople, politicians, and religious

leaders are all likely to be some examples of individuals with an enhanced interpersonal intelligence (Armstrong, 2009; Gardner, 2006a; Gardner, 2011a; Richards & Rodgers, 2014).

2.1.5.7 Intrapersonal intelligence

The intrapersonal intelligence, as opposed to interpersonal intelligence, deals with self-knowledge and the capacity to operate on that knowledge adaptively. The core ability of this inner-self intelligence resides in individuals' understanding and awareness of their own feelings and thoughts. Gardner (2006a) defines this intelligence as the capacity "to form an accurate, veridical model of oneself and to be able to use that model to operate effectively in life" (pp. 49-50). In other words, this intelligence is the capacity to be thoughtful and self-reflective. Simply stated, individuals with this intelligence are capable to step back and observe themselves from outside. As such, it requires understanding and awareness of the internal aspects of self (e.g., feelings, intuition, and spirituality) and considers both self-identification and the ability to transcend self as part of intrapersonal intelligence. Armstrong (2009) says this intelligence includes "having an accurate picture of oneself (one's strengths and limitations); awareness of inner moods, intentions, motivations, temperaments, and desires; and the capacity for self-discipline, self-understanding, and self-esteem" (p. 7). Examples include the novelists, theologians, psychologists, philosophers, psychotherapists, therapists, entrepreneurs, creative artists, and shamans (Armstrong, 2003, 2009; Gardner, 2011a; Richards & Rodgers, 2014).

2.1.5.8 Naturalist intelligence

This intelligence which was added to the list in 1995, encompasses individuals who can distinguish between and classify flora and fauna. They are sensitive to patterns, make connections to elements in nature and enjoy and respect other species and the environment.

According to Armstrong (2009), they are sensitive to other natural phenomena such as mountains, cloud formations and so on. Richards and Rodgers (2014) define this intelligence as the ability to "understand and organize the patterns of nature" (p. 231). In this regard, Gardner (1995b) states that individuals who possess this intelligence can distinguish among living things (e.g., plants), classify, order, and define objects based upon common attributes. Zoologists, farmers, biologists, naturalists, ecologists, and entomologists, are a few examples of the people with a highly developed naturalist intelligence (Armstrong, 2009; Gardner, 2006a, 2011a).

2.1.5.9 Existential intelligence

The ninth intelligence was added to the list in 1999 and is called the intelligence of big questions. This intelligence speaks about the abilities to raise and ponder big questions (Gardner, 2006a). Accordingly, Palmberg (cited in Richards & Rodgers, 2014) states that this intelligence is "a concern with philosophical issues such as the status of mankind in relation to universal existence. In learning situations, the need to see 'the big picture' in order to understand minor learning points and details" (p. 231). Gardner (1999; cited in Armstrong, 2009) defines this intelligence as:

> the capacity to locate oneself with respect to the furthest reaches of the cosmos - the infinite and infinitesimal - and the related capacity to locate oneself with respect to such existential features of the human condition as the significance of life, the meaning of death, the ultimate fate of the physical and the psychological worlds and such profound experiences as love of another person or total immersion in a work of art. (p. 182)

Gardner also calls this intelligence as "a concern with ultimate life issues" (Armstrong, 2009, p. 182). In response to those who have hesitated about the existence of the ninth intelligence and have related it to religious or spiritual matters, Gardner (1999b) reminds them to "put aside the term spiritual, with its manifest and problematic connotations, and to speak instead of an

intelligence that explores the nature of existence in its multifarious guises" (p. 60). Further, in Section 2.1.5, the set of criteria that an intelligence needs to meet and satisfy before being called an intelligence were provided. As such, Gardner posits that each intelligence has met all or most of the aforementioned set of criteria. Yogis, Saints, lamas, and theologians are a few examples of people with an enhanced existential intelligence (Armstrong, 2009).

2.1.5.10 Critics on Multiple Intelligences Theory

Along with the growing reputation of the MI theory over the last three decades, there has been a body of controversy and criticism lodged against the theory (e.g., Akpunar & Dogan, 2011; Barnett, Ceci, & Williams, 2006; Gottfredson, 2004; Peariso, 2008; Traub, 1998; Visser, Ashton, & Mohammad, 2006; Willingham, 2004). Most of the complaints have arisen as Gardner has attacked the standard notion of intelligence as a single capacity with which an individual is born. The others, for instance, are 1) lack of empirical support (Brody, 2006; Gottfredson, 2004; Waterhouse, 2006); 2) pedagogical problems (Klein, 1997); 3) lack of solid research to support the existence of MI in the classroom (Collins, 1998; Traub, 1998; Willingham, 2004); 4) lack of construct validity and utility of g and on the content of the tasks (Visser et al., 2006); and 5) materialism and Darwinism (Akpunar & Dogan, 2011).

Despite its popularity, MI theory has been utterly criticized. The majority of criticisms have been made by academics and journalists who are not closely connected to the classroom. In fact, few criticisms have been made by those who have applied and experienced the MIT benefits in their classrooms. Some of the criticisms lodged against the MIT are quite subjective. For instance, Akpunar and Dogan (2011) criticizes the theory for looking at Darwin's theory of evolution. Accordingly, they state that the theory should not have been applied in Turkey's educational system as Turkish people have been labelled by Darwin as "an inferior race" and

"barbarian" (pp. 225, 228, 229). Other well-known skeptics include Willingham (2004) and Traub (1998) who would be sympathetic to solid research. Willingham (2004), for instance notes that "textbooks [on MI theory] for teachers in training generally offer extensive coverage of the theory, with little or no criticism" (p. 22). In addition, Traub (1998) states that "few of the teachers and administrators I talked to were familiar with the critiques of multiple intelligence theory; what they knew was that the theory worked for them. They talked about it almost euphorically" (p. 3). Controversy also surrounds Gardner's identification and labelling some commonly known gifts or talents (e.g., music, art) as intelligences (Morgan, 1996; Stage, Muller, Kinzie, & Simmons, 1998). Gardner and Walters (1993) addressed critics as:

> Placing logic and language on a pedestal reflects the values of our Western culture and the great premium placed on familiar tests of intelligence. A more Olympian view sees all seven intelligences as equally valid. To call some "talent" and some "intelligence" displays this bias. Call them all "talents" if you wish; or call them all "intelligences". (pp. 35-36)

Moreover, Gardner (1995b) states that "I reject the distinction between talent and intelligence; in my view, what we call "intelligence" in the vernacular is simply a certain set of "talents" in the linguistic and/or logical-mathematical spheres" (p. 203).

Despite the number of criticisms against the MI theory, it has spread around the world. MIT has been utilized and incorporated in different countries at academic, school/classroom, and community levels, demonstrating the overwhelming success of the theory. Publishing over 20 books on MI, Gardner has responded to these criticisms (Gardner, 1995b, 2006a, 2006b, 2006c; Gardner & Moran, 2006). In chapter 15 of his book, Thomas Armstrong (2009), a specialist in educational theories, synthesizes some of the prevalent criticisms against the MI theory. He has offered answers to three major critics or misconceptions highlighted as 1) lack of empirical support, 2) lack of solid research to support the existence of MI in the classroom and 3) leading

students to mistakenly believe that they are smart. A brief review of his responses are provided below.

The first criticism as noted by Armstrong, comes from the psychometric or testing community. On this view, they argue that the literature does not support the existence of eight independent intelligences (e.g., Brody, 2006; Gottfredson, 2004; Visser et al., 2006) but the g factor. To them, some intelligences, bodily-kinesthetic for instance, might look like a talent or ability rather than an intelligence. In this regard, Visser, Ashton, and Vernon (2006) assert that different intelligences introduced by Gardner are actually secondary or even tertiary capabilities to the g factor. As another example, Gottfredson (2004) states that,

> The g factor was discovered by the first mental testers, who found that people who scored well on one type of mental test tended to score well on all of them. Regardless of their contents (words, numbers, pictures, shapes), how they are administered (individually or in groups; orally, in writing, or pantomimed), or what they're intended to measure (vocabulary, mathematical reasoning, spatial ability), all mental tests measure mostly the same thing. This common factor, g, can be distilled from scores on any broad set of cognitive tests, and it takes the same form among individuals of every age, race, sex, and nation yet studied. In other words, the g factor exists independently of schooling, paper-and-pencil tests, and culture. (p. 35)

In response to this criticism, Armstrong (2009) states that there is no doubt about the existence of the g factor as it is primarily located as an equal in logical-mathematical alongside of other intelligences. However, the superiority of the g factor to other forms of human cognition is disputable. In other words, the dispute is about whether to call them as intelligences or talents. Gardner (2003) ends this when he says that he intended to be challenging when calling them multiple 'intelligences' and not 'talents'. He states that:

> I decided to call these faculties 'multiple intelligences' rather than abilities or gifts. This seemingly minor lexical substitution proved very important; I am quite confident that if I had written a book called "Seven Talents" it would not have received the attention that *Frames of Mind* received. (p. 3)

As Armstrong notes, Gardner intended to challenge the sacrosanct nature of intelligence as a singular phenomenon. As such, Gardner stirred up the controversy in order to make people question the traditional view of what it means to be "intelligent". Furthermore, Gardner (2011a) has used eight criteria to identify and accept these intelligences. In fact each of these criteria is based on a range of empirical studies. However, there is an inconsistency with this argument. Gardner's empirical argument relies too heavily on developing his theory while theory generation and theory validation are two different aspects that should be considered separately. In arriving at his theory, Gardner claims that he has combined the empirical findings of numerous studies from different disciplines. Thus, he asserts the importance of empirical evidence for the MI theory, stating that "theories such as evolution or plate tectonics or MI develop through the continuing accumulation of evidence, which makes the theory more or less plausible, more or less relevant for further research, and more or less useful to practitioners" (Gardner & Moran, 2006, p. 230). However, in agreement with Waterhouse (2006), the process of validating a theory is different from generating a theory requiring evidence.

The second criticism as noted by Armstrong relates to the lack of solid research for the MI theory. For instance, Collins (1998) asserts that "evidence for the specifics of Gardner's theory is weak, and there is no firm research showing that its practical applications have been effective" (p. 95). Willingham (2004) adds that:

> …hard data are scarce. The most comprehensive study was a three-year examination of 41 schools that claim to use multiple intelligences. It was conducted by Mindy Kornhaber, a longtime Gardner collaborator. The results, unfortunately, are difficult to interpret. They reported that standardized test scores increased in 78 percent of the schools, but they failed to indicate whether the increase in each school was statistically significant. If not, then we would expect scores to increase in half the schools by chance. Moreover, there was no control group, and thus no basis for comparison with other schools in their districts. Furthermore, there is no way of knowing to what extent changes in the school are due to the implementation of ideas of multiple intelligences rather than, for example, the energizing thrill of adopting a new schoolwide program, new statewide standards, or some other unknown factor. (p. 24)

In addition, some contend that the analysis of the data does not explain the variables within the study. In response to this critique, Armstrong refers to the restrictive law of 'No Child Left Behind', within the United States, and the obstacles in achieving the objectives of valid research. He refers to the demand for quantitative precision in education that has severely restricted research to highly controlled studies by using standardized tests and quantitative tools. As such, he reminds that the effects of this law do not allow for the variables represented within this theory. However, he states that MI theory provides a range of strategies, techniques and methods that can be implemented by teachers' variously developed approaches. Hence, conducting controlled studies as asked by Willingham is impractical because of the difference between the results of the MI collected from a class to the other classroom. Further, demanding a certain level of statistical significance from a study equates the risk of rejecting an educational intervention because of "missing the cut" (e.g., if the level of statistical significance were .05, then a level of .06 would be considered "insignificant"). Moreover, reducing the success or failure of a study to mere numbers might lead to rejecting other valid sources. Thus, Armstrong (2009) posits that "the demand for quantitative precision in education is an unfortunate nod toward *positivism*—the idea that ultimate truth can be expressed only through numbers or similarly precise scientific formulations" (p. 194).

As the final criticism, Armstrong refers to critics who have accused the MI theory of leading students to mistakenly believe that they are smart (Collins, 1998; Willingham, 2004). For instance, Collins (1998) criticizes strategies utilized in an MI guide concerning the learning about the oceans. Accordingly, he refers to a child using his bodily-kinesthetic intelligence to learn the history of America, and doubts "how deeply can a student comprehend a given topic by relying on his strongest intelligence?" (p. 96). In this regard, Armstrong asserts that a well-designed role-play could imaginatively put students at for example, "Plymouth Rock on

November 11, 1620", and " improvise reasons why they decided to leave England" thus providing students the opportunity about the objective in a highly physical way (Armstrong, 2009, p. 196). Furthermore, he asserts that it is not enough to tell learners that they are only smart in eight independent ways and expect them to blossom. Rather, it needs to be followed with "solid academic effort leading to tangible improvements in knowledge of history, math, science, reading, and other basic subjects" (Armstrong, 2009, p. 196).

Besides Armstrong responding to critics, Gardner (1999b) has also addressed some of the questions and criticisms that have arisen about the theory in his book entitled "Intelligence Reframed". Putting forth these criticisms, misconceptions and responses, provides a complete review of the criticisms about MIT. Any criticism of a theory is always helpful for its further development and improvement.

Although the introduction of computers is not the first challenge in the field of education, it has brought initiative reforms to education values in opposition to traditional schooling. Since then, a well-established challenge was imposed on the division between traditional and non-traditional-based learning to marry the technology with the past, present, and future learning theories. The theory of constructionism, as one of the reforms, has inspired many researchers in the field, and has been widely embraced by academics to rethink about their schooling in the age of computers.

2.1.6 Constructionism

The Constructionism philosophy of learning is both a theory of learning and a strategy for education that was developed by Seymour Papert (1993a, 1993b; 1991). The theory is built on the foundational theory of constructivism via the work of Piaget. The basic idea in

constructionism is that knowledge is not solely transferred from teacher to student, but it is actively constructed by the learner. In addition, constructionism recommends that learners are more likely to create new ideas when they are engaged in building some objects or artifacts such as a poem, or a computer program, that could reflect on learners and be shared with others (Kafai & Resnick, 2011). In other words, the theory advocates learner-driven learning that is supported by an object to think with, such as a computer. In his interview, Papert (2006), in opposition of the traditional schooling or instructionism, claims that 'the role of the teacher is to become a co-learner'. With respect to learning, Papert (1993b) argues that we should view learners "as the active builders of their own intellectual structures" (p. 19). He also argues that

> Constructionism--the N word as opposed to the V word--shares constructivism's connotation of learning as "building knowledge structures" irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe. (Papert & Harel, 1991, p. 1)

Hence, constructionism involves two interwoven types of construction: the construction of knowledge in the context of building personally (Kafai & Resnick, 2011, p. 1)

Integration of technology into learning is one of the teaching and learning methods in constructionism asserting the need of creating knowledge by students and completing the tasks by themselves. As such, the theory emphasises learning by doing to create works leading to the interest of the learners by using technology affordance on a computer network. Accordingly, the learners will "understand themselves, understand the importance of their endeavour and practice on patience and problem solving" (Sirisopon & Sopeerak, 2013, p. 1310). Beyond engaging learners in building objects, Papert (1993b) believes that teaching should also foster what he termed "self-referential thinking about thinking itself" (p. 21). As he put it, "Thinking

about thinking turns the child into an epistemologist, an experience not shared by most adults" (Papert, 1993b, p. 19) .

In this regard, Papert (1993b) argues the importance of computer programming as an effective and useful activity in constructionist learning that enables learners' 'thinking about thinking' in two different ways:

> First, the computer allows or obliges, the child to externalize intuitive expectations. When the intuition is translated into a program it becomes more obtrusive and more accessible to reflection. Second, computational ideas can be taken up as materials for the work of remodeling intuitive knowledge. (p. 145)

Including learners in constructing their own programs, Papert changed his views to the role of the computer in teaching and learning, and suggested the acting role of the computer as the tutee that provides learners the opportunity to teach the computer through programming.

As promising and vibrant as the movement might be, there are several inconsistencies with this theory and it is still under question on several fronts. Some of the major conflicting attributes ascribed to constructivism as listed by Holstein and Gubrium (2008) are:

> Constructivism has been called radical and conservative; liberating, managerial, and oppressive; relativist, revisionist, and neo-objectivist; cancerous, pernicious, and pandemic; protean, faddish, trendy, and dull. It has been a major combatant in the "science wars" and "culture wars" of the 1990s and 2000s. (p. 3)

However, the current study does not aim to resolve these debates. Instead, it presents constructionism as one of the pioneering theories of learning embodied in the social sciences that has proven remarkably fruitful over 40 years of its development.

As technological advances have facilitated learning for people separated by time and place, addressing the above-mentioned theories, while useful in creating instructional settings, do not adequately tackle the reflective thinking skills, knowledge construction, and cognition sharing through social interaction with peers and more knowledgeable others in the online and computerized world of today with its networked affordances. In other words, the development of behaviorism, cognitivism, and constructivism have all happened at a time when learning and teaching were not integrally related to the advent of technology. Therefore, new methods in education and learning contexts are required. According to Siemens (2005), the author of connectivism, it seems necessary to have a theory for the digital era to account for the enhancement of the learning materials in the networked world. He asserts that the emergence of technology has reorganized how we live, communicate, and learn. In addition, Ally (2008) states that,

> Due to the information explosion in the current age, learning is not under the control of the learner. Changing environments, innovations, changes in the discipline and in related disciplines all suggest that learners have to unlearn what they have learned in the past, and learn how to learn and evaluate new information. (p. 19)

In this regard, learning theories and needs should be reflective of underlying social environments. Existing learning theories might need to be adapted to meet the requirements of the digital age, taking the affordances brought about by the Internet into consideration to guide the development of effective learning and learning materials. According to Seimens (2006), using digital tools and devices to connect, enable students to "reflect on, dialogue about, and internalize content in order to learn" (p. 76). To him, "content is knowledge frozen at a certain time (a magazine article), whereas a connection is a pipeline to continue to flow new knowledge" (Siemens, 2006, p. 76). In this regard, the notion of connectivism was developed as a learning theory for the digital age and the networked world of today.

2.1.7 Connectivism

Connectivism is an emerging theory which was proposed by Siemens (2005) based on the deficiencies of the above-mentioned learning theories. Connectivism claims to provide a theory for learning in the digital era and accounts for the connection and socialization affordances brought about by the Internet. Indeed, it gives the learners the chance to connect to each other via social networking or collaboration affordances. As such, the theory attempts to provide a detailed explanation for collaborative learning in a digital era of virtual learning and networked settings. At the same time, it explains the lifelong learning in a technologically advanced age (Steffens, 2015) and can be used in different modes of learning (face-to-face, blended, online). (Pettenati & Cigognini, 2007).

Based on connectivism, learning is enhanced and motivated when a learner connects to and feeds information into a learning community. Siemens (2005) argues that a community is formed when learners with similar interests join each other. The community then allows for interaction, sharing, dialoguing, and thinking together. Connectivism, as pointed out by Siemens (2006), proposes that people learn through the process of creating networks that could be internal or external. According to Siemens (2006), "the act of learning… is one of creating an *external network* of nodes-where we connect and form information and knowledge sources. The learning that happens in our heads is an *internal network (neural)*" (p. 29). In this regard, *internal networks* account for understanding that occurs in the human mind, while *external networks* connect new knowledge and encompass different nodes such as people, organizations, libraries, books, and websites. This means that network connections are used as both sources of information and a knowledge base for various connections that we make. Hence, the links between a learner's connection and information sources distinct the theory of

connectivism from other prominent learning theories. Connectivism synopsis is also defined as:

> The starting point of connectivism is the individual. Personal knowledge is comprised of a network, which feeds into organizations and institutions, which in turn feed back into the network, and then continue to provide learning to [the] individual. This cycle of knowledge development (personal to network to organization) allows learners to remain current in their field through the connections they have formed. (Siemens & Conole, 2011, p. 12)

In connectivism, as explained by Kop and Hill (2008), knowledge can be circulated across an information network and it can be kept in various digital formats (Kop & Hill, 2008). Accordingly, Pettenati and Cigognini (2007) define connectivism as the use of social networking in learning and knowledge. Connection is the basic element of connectivism that requires learners' interaction with elements that go beyond the learning practice in the classroom setting and allows real-life application of the practiced elements. Siemens defines connectivism as:

> The integration of principles explored by chaos, network, and complexity and self-organization theories. Learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing. (2005, Connectivism section, n.d.)

Connectivism is driven by understanding decisions that are made on the basis of rapid and continuous changes. Due to the information explosion in the present time, the learners' continual need for new information, requires their ability to draw distinction between important and unimportant information. Changing environments and innovations as addressed by Ally (2008), suggest that "learners have to unlearn what they have learned in the past, and learn how to learn and evaluate new information. What must be learned is determined by others and is continually changing" (pp. 19-20). In this regard, Siemen (2005) suggests that learners should be able to recognize changes happening to the new information which are made of the past and

yesterday decisions. To better understand the concepts in connectivism, Siemen (2005) outlined eight basic principles:

1. Learning and knowledge rests in diversity of opinions.
2. Learning is a process of connecting specialized nodes or information sources.
3. Learning may reside in non-human appliances.
4. Capacity to know more is more critical than what is currently known
5. Nurturing and maintaining connections is needed to facilitate continual learning.
6. Ability to see connections between fields, ideas, and concepts is a core skill.
7. Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
8. Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision. (Connectivism section, n.d.)

Connectivism as a learning theory has also met with some criticism by some authors (Bell, 2011; Clarà & Barberà, 2014; Duke, Harper, & Johnston, 2013; Kop & Hill, 2008; Verhagen, 2006). For instance, Verhagen (2006) considers connectivism as a pedagogical view rather than a learning theory. To address the concerns of critics, he argues that the principles of connectivism are not new as they were presented in the already existing learning theories. He argues that the notion of internal networking has been described under the cognitivist's mental processing. Further, he adds that external networking is a form of socialisation that has been considered in the theory of Social Constructivism. Thus, to him, connectivism is more a supplementary teaching model rather than a learning theory. Moreover, Duke, Harper and Johnston (2013) argue that connectivism is "a tool to be used in the learning process for instruction or curriculum rather than a standalone learning theory" (p. 10). While considering the strength of the theory in applying web-based activities for learning, Kop and Hill (2008) assert that a learning theory should not be just limited and focused in the use of web-based environments but rather it could be applicable to all learning contexts. In a recent article, Bell (2011) calls connectivism 'a standalone theory of learning' and highlights that "connectivism is perceived as relevant by its practitioners but as lacking in rigor by its critics" (p. 98).

Although not all researchers and scholars have accepted connectivism as a learning theory, its paradigms have been accepted by many for its influence and support in learning and teaching in a digital setting (Kop & Hill, 2008). Moreover, connectivism comprises "a practical dimension" (Hogg & Lomicky, 2012, p. 100). Examining the above-mentioned learning theories of behaviorism, cognitivism, and constructivism, many connections and overlaps can be revealed. For instance, Ertmer and Newby (2013) appoint that these theories can be used as a learning taxonomy. Accordingly, they state that behaviourism can respond to the *what*, cognitivism to the *how* and constructivism to the *why*. In other words, behaviorism looks for the behavior change and facts; cognitivism, for mental processes and principles and constructivism for situated and contextual learning and higher-level thinking that enhances personal meaning. However, as stated by Reese (2015), the need for a pedagogical altering is still vital because of the 21st century learners. She also appoints the "need to develop skills and competencies" that provides learners the opportunity "to decipher and utilize information quickly and efficiently" (p. 580).

Knowing that education is inevitably anchored to the technological advances that have facilitated learning in the digital age, the role of connectivism and its integration in learning and teaching cannot be ignored. Thus, the integration of connectivism principles with the above-mentioned existing theories can best account for the learning in the digital age. Indeed, tertiary students must learn how social media literacy links and assists them to the real world and promotes their learning. Lecturers, on the other hand, need to use these facilities and affordances properly and teach students thoughtfully. Thus, the present study draws upon multiple intelligences, Constructivism and Connectivism as its theoretical framework for this study.

2.2 Chapter Summary

This chapter provided a brief review of the literature pertinent to learning theories and the theoretical framework of the study, including the theory of multiple intelligences, Constructivism and Connectivism. The following chapter will provide a detailed critical review of the relevant literature on the emergence of Web 2.0 technologies, different modes of delivery, and the rise of different generations in higher education. It then provides research studies on multiple intelligences and online videos.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

This chapter aims to provide a context for the study. It thus provides the literature pertinent to the research questions of the study. This chapter provides a critical review of the relevant literature, including the emergence of Web 2.0, social networking tools, different modes of delivery, and the rise of different generations in higher education. Next, it reviews previous studies about perceptions and experiences with online videos and explores a body of relevant research studies on multiple intelligences.

3.1.1 The emergence of Web 2.0

Since its foundation by Sir Tim Berners-Lee in 1989, the World Wide Web has played an important role in various aspects of our social and professional lives. Its impact has been more than other technological advancements. Web 1.0, the early version of the World Wide Web could only be used as a platform for information delivery (Bower, 2015; McLoughlin & Lee, 2008; Song & Lee, 2014), and thus, users' online interactions (e.g., learner-to-learner and learner-to-interface interactions) were restricted (Song & Lee, 2014). A recent evolution of the World Wide Web called Web 2.0, has affected our daily communication and information sharing more so than anything in previous decades (Soomro, Zai, & Jafri, 2015). The term 'Web 2.0' was initially introduced in 1999 by DiNucci (DiNucci, 1999; Song & Lee, 2014) and became popularized by O'Reilly in 2005 (Bower, 2015; Mashael Nasser, Mohammad, Fayyoumi, & Alrashideh, 2015; O'Reilly, 2007; Soomro et al., 2015).

As a new generation of Web-based services, Web 2.0 represents an active interaction platform focusing on users' participation, collaboration, and information sharing. In other words, Web

2.0 is a set of applications and technologies supporting online collaboration, creation, interaction and information sharing among users (Kitsantas & Dabbagh, 2011; Song & Lee, 2014; Soomro et al., 2015). Soomro et al. (2015) posit that whereas utilizing the internet was limited to information delivery in the past, the arrival of Web 2.0 has provided users the opportunity "to create and produce various forms of information, and to share information and content they create with the world in an effective and easy manner" (p. 286). Thus, the status of the online information has been changed from 'static' to 'dynamic'. Juskeviciene and Kurilovas (2014) refers to Web 2.0 as tools that "facilitate participators' information sharing, interoperability, user-centred design, and collaboration on the World Wide Web" (p. 18). A key feature of the success of Web 2.0 as addressed by Bower (2015) is its users' willingness to contribute contents publically (Bower, 2015). As such, the Web 2.0 platform is defined as "the principles and practice of facilitating information sharing and social interaction by users generating, altering and uploading web-based content whereas its predecessor, Web 1.0 limits users to the passive viewing and download of largely copyrighted information" (Liburd & Christensen, 2013, p. 100). In other words, Web 2.0 differs from its former version, Web 1.0, as it provides users the opportunity to actively change and create information rather than being a passive information recipient. In addition, O'Reilly (2007) defines Web 2.0 as,

> A continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation" and going beyond the page metaphor of Web 1.0 to deliver rich user experiences. (p. 17).

3.1.2 Web 2.0 technologies in education

With increasingly rapid and continued growth and advancement, Web 2.0 technologies have become one of the most important means in learning environments and higher education institutes in particular. Web 2.0 technologies are gaining intense interest in all educational

sectors as they are supporting students' demands and are facilitating the changes of learning through extending learner-centred experiences (Dabbagh & Kitsantas, 2012; Rahimi, van den Berg, & Veen, 2015). For instance, specific features and benefits of Web 2.0 tools, particularly, collaborative and interactive aspects of knowledge and information acquisition, are fostering teaching and the learning process (Soomro et al., 2015). According to some researchers (e.g., Yeen-Ju, Mai, & Selvaretnam, 2015), Web 2.0 technology has opened the doors to a wide repository of information fostering communication and collaboration practices among learners. According to Soomro et al. (2015), teaching-friendly characteristics of Web 2.0 technologies have brought some advantages such as "easy accessibility, usability, and flexibility", supporting various pedagogical and instructional approaches (p. 285). Moreover, Nazatul Aini (2014) addresses more advantages for higher education institutes including "easier and faster access to information, when and where it is needed; sharing accumulated experiences and resources; and compatibility with the elements of the educational field and the existing contextual dynamics" (p. 88).

The emergence of the Web 2.0 social networking technologies has provided new opportunities for education, such as facilitating collaboration, creativity and innovation for students in groups or individually (Lee & Markey, 2014; Moyle, 2010). For instance, Lee and Markey (2014) appoint that Web 2.0 technologies allow students to create and share content with their peers through social networking "in a dynamic and instantaneous manner" that enhances interaction, collaboration and networking among students (p. 284). Web 2.0 technologies have allowed for an expansion of activities and user contributions. According to a report released by the NMC Horizon Report: 2014 Higher Education (Johnson, Adams Becker, Estrada, & Freeman, 2014), "social media is changing the way people interact, present ideas and information, and judge the quality of content and contributions" and "almost 40% of the world population regularly use

social media" (p. 8). In this regard, Newland and Byles (2014) address the capability of Web 2.0 technologies to provide a different pedagogical approach through collaborative knowledge construction.

In conjunction with the arrival of emerging Web 2.0 technologies, many universities are encouraging their educators to rethink and reframe their teaching approaches and delivery methods. As a response to the technology-enhanced approach, a more student-centered experience that actively engages students is promoted. However, as Moyle (2010) states, the advantages of implementing Web 2.0 networking technologies in the learning environment "depends upon the teaching and learning approaches used, and this shifts the emphasis to the skills and the role of the teacher" (p. 39). As such, some researchers (Harris & Rea, 2009; Karvounidis, Chimos, Bersimis, & Douligeris, 2014) recommend incorporating such technologies in a way as to not obstruct the pedagogy. Also recommended is the use of these technologies in a way to create a balance between the needs and demands of both students and educators (Cole, 2009). Further, the rapidly increasing number and type of Web 2.0 technologies and tools provide a barrier for educators "to keep pace and understand the opportunities for their use in teaching and learning" (Cain & Fox, 2009, p. 1). Consequently, Cole (2009) argues that the outcomes of integrating technology into the classroom should be clear by the higher education institutes. They must not confuse technological interactivity with interactive learning.

There are many different types of online tools that can be categorized as Web 2.0. These include social networks (e.g., Facebook, LinkedIn, MySpace), Wikis (e.g., Wikipedia), blogs (e.g., Wordpress, Academia), microblogs (e.g., Twitter, Blogger), media sharing (e.g., YouTube, Flickr), and social bookmarking services (CiteULike, Delicious, iKeepBookmarks), and

creative works (e.g., podcasts, videocasts). All these share the same core idea of constructing knowledge and enhancing users' interactivity (Bower, 2015; Cain & Fox, 2009; Greenhow, Robelia, & Hughes, 2009; Morgan, 2014c; Rahimi et al., 2015; Soomro et al., 2015). In a like manner, Rahimi et al. (2015) state that Web 2.0 tools provide students "with 'just-in-time' and 'at-your-fingertips' learning opportunities, and can support a wide range of teaching and learning activities" (p. 781). Among the above-mentioned Web 2.0 technologies, social networking sites such as Facebook, YouTube, LinkedIn, Bulletin Boards, Wikis, Blogging, and Twitter have become ubiquitous. A brief review of these Web 2.0 tools, and their potential and contribution to education are provided below.

3.1.2.1 YouTube

Ever since its introduction in the early 1960s, the video has played an important role in education and has proven its effective role as a learning medium in capturing and presenting information and enhancing understanding (Brophy, 2008; June, Yaacob, & Kheng, 2014; Mayer, 2009, 2011; Ritzhaupt, Pastore, & Davis, 2015). Given the availability of the internet, the advent of Web 2.0, and social media technologies and apps such as YouTube, they have provided more user access opportunities to a wide audience worldwide. YouTube, as the world's largest video-sharing website, provides users an opportunity to create, upload, share, and view videos easily using any web browser, as well as the ability to comment on others' contributions (Galan, Lawley, & Clements, 2015; Logan, 2012; Miller, 2010; Ritzhaupt et al., 2015; Szeto & Cheng, 2014; Szeto, Cheng, & Hong, 2015; Tamim, 2013). As stated in its official site (http://www.youtube.com/yt/about/), it provides "a forum for people to connect, inform, and inspire others across the globe, and acts as a distribution platform for original content creators and advertisers large and small." YouTube is the third most popular and ubiquitous video-sharing website on the Internet that hosts a wide variety of videos (Garrett,

2016; Jung & Lee, 2015; Orús et al., 2016; Rabee et al., 2015). YouTube was created by three ex-PayPal employees: Chad Hurley, Steven Chen, and Jawed Karim (Miller, 2011). Officially launched in December 2005 it has more than 1 billion views per month (Garrett, 2016). Today, views per month on YouTube exceed 6 billion hours in 88 countries around the world in 76 languages and "400+ hours of video are uploaded every minute." More than half of YouTube views come from mobile devices and YouTube is also called a practical tool for teaching learners through preschool to graduate level and beyond (Rabee et al., 2015).

Although classrooms have students from various generational cohorts (Baby Boomers, Generation Xers, and Net-Geners), the majority of today's students belong to the Net Generation. As a generation often possessing wide and advanced ICT skills, Net generation students consider the integration of web-based technologies in the process of their learning and information gathering (Buzzetto-More, 2015). Their demand for having instant access to information and integrating technology as part of their educational experience in the classroom may pose a challenge for many educators as they need to use innovative strategies to meet students' learning expectations. YouTube as part of the emerging technology and a component of an active learning strategy is an available resource to meet the needs of both educators and multigenerational students. For instance, some researchers (Garrett-Wright & Abell, 2011) state that You-tube provides an avenue for students to visualize the concepts that they might not have otherwise noticed during the course. It also provides a discussion forum that enhances engagement opportunities amongst learners. Buzzetto-More (2015) posits that YouTube videos enhance students' engagement, depth of understanding, and satisfaction. However, the use of YouTube videos as an active teaching strategy creates the need to sort through the platform to find good quality material (Ritzhaupt et al., 2015). Thus, educators and academics aim to find or create well-designed videos to support their teaching and learning by considering a) the goal

and purpose that they want to achieve, and b) the content relevance and appropriateness (Logan, 2012). Accordingly, Vie (2008) argues that the most significant challenges are "not…providing access for students surrounded by technology but rather effectively integrating technological literacy instruction into the classroom in meaningful ways" (p. 10) and the technological literacy gap between students and their educators (Alon & Herath, 2014)

Using YouTube as a platform has provided various educational benefits for both academics and students. According to Orús et al. (2016), integrating YouTube videos has some advantages such as: simplifying video searching in any topic, promoting student-student and teacher-student collaboration and interaction, sharing content and getting students' contributions and feedback, and improving students' satisfaction. According to Garrett-Wright and Abell (2011), they suggest that YouTube videos can offer a cost effective and innovative teaching strategy that assists bridging the generational gap between educators and students. The use of YouTube also assists user-generated content, peer-to-peer interaction, and collaborative content production and editing (Miller, 2012). In addition it can provide a combination of animation, visual, and audio components. If used properly, YouTube videos can provide a rich environment to heighten students' engagement, motivation and critical thinking (Alon & Herath, 2014; Artello, 2014; Logan, 2012; Smith, 2014). Another advantage of using YouTube is its compatibility to work with different learning management software (Agazio & Buckley, 2009; Garrett-Wright & Abell, 2011). As such, the majority of videos on YouTube can be embedded in other web-based media or online course environments such as Moodle and Blackboard (Szeto & Cheng, 2014). Another key feature of YouTube is its multi-uses. Videos can be shared across all social networking platforms such as Facebook and Twitter, and can be easily accessed via smartphones and tablets (Smith, 2014, p. 1594). YouTube videos can save universities' time and money as they are easily accessible at no cost. Some other features and

benefits of using YouTube videos in teaching as asserted by Szeto Cheng (2014) are: “a learning source for searching for learning information, and a tool to facilitate deep learning that supports comparing and analysing ideas, qualifying hypotheses and theorising knowledge, where the teacher’s role is to stimulate discussion among students” (p. 55). As a multi-purpose online video-sharing repository, students can also take advantage of the platform. Students can easily produce, share and discuss their videos with their peers and create their own video learning communities (Agazio & Buckley, 2009; Szeto & Cheng, 2014). These functions provide students with a forum in which they can vide, compare and critique a particular topic.

While a wide variety of free access YouTube videos is available, lecturers often struggle with time to find the right high quality videos among millions of possibilities uploaded on the site. A solution to make this difficult task more manageable is to create educational websites and upload and share videos for academic use (Buzzetto-More, 2015; Sherer & Shea, 2011). TeacherTube (http://www.teachertube.com/staticPage.php?pg = about), YouTube EDU (http://www.youtube.com/edu), YouTube for Schools (https://www.youtube.com/schools), Academic Earth (http://academicearth.org/about), and MIT Open Courseware (http://ocw.mit.edu/OcwWeb/web/home/home/index.htm) are some of the video-sharing sites geared to the needs of educators and teachers providing a world-class education to everyone. These sites attempt to educate, engage and inspire learners in different levels of education worldwide. For example, MIT Open Courseware (http://ocw.mit.edu/OcwWeb/web/home/home/index.htm), uploads and shares exams, lecture notes, and videos of more than 1900 MIT courses to the public freely. YouTube for Schools (https://www.youtube.com/schools) is also an opt-in platform to provide schools the opportunity to have a secure access to educational videos on YouTube channels like TED and Khan (Buzzetto-More, 2015). In addition, there are some general resources such as TeachersHelpingTeachers

(www.pacificnet.net/~mandel/EducationalResources.html) and Classroom 2.0: (www.classroom20.com) covering all or most aspects of technology integration into the classroom. Another solution for higher education institutes showing increased interest in the potential of YouTube videos is to have their own YouTube channels to manage video contents and their educational impacts. For this reason, many universities (e.g., UC Berkeley, Carnegie Mellon) partnered with YouTube and established their own channels under YouTube EDU (http://www.youtube.com/edu) to provide free access to full courses from various universities (Orús et al., 2016; Sherer & Shea, 2011).

3.1.2.2 Facebook

Facebook is another example of a social networking platform that may facilitate learning activities among students. Since its introduction by Harvard University students in 2004 (Kirkpatrick, 2010, 2011), Facebook has become one of the most popular and largest social networking sites in the world (Alba & Stay, 2008; Lubis et al., 2012; Mazman & Usluel, 2010; Mistades, 2016; Ng & Wong, 2013) and the world's fastest growing company in history (Kirkpatrick, 2010, 2011). Nowadays, tertiary students rely heavily on this social networking tool and about 85% of students use this platform (Lubis et al., 2012). Accordingly, Facebook provides social and academic platforms to connect students with their friends, classmates and lecturers (Omar, Embi, & Yunus, 2012). Moreover, Bosch (2009) argues that the current generation of students that are mostly net generation students may resist the traditional methods of teaching and learning (Bosch, 2009). As such, higher education institutes and academics began to embrace this tool and realise its pedagogical value and its implications for teaching and learning. It also connects students to their peers and teachers, and improves their communication and allows them to share their thoughts, opinions and new information without being hesitant or shy (Jumaat & Tasir, 2013). However, the researcher disagrees with these

authors (Jumaat and Tasir). Posts in group sites can be subject to criticism or trolling and many students feel hesitant about posting in these type of sites.

As of December 31, 2015, Facebook has become part of the social life with 1.04 billion daily and 1.59 billion monthly active users worldwide (according to *the report released by the site and accessed in* April 2016). Smith (2011) calls Facebook "the biggest online phenomenon for recent years" (p. 1). Despite its primary reputation for social networking activity, it has quickly become a respectable e-learning platform (Bosch, 2009). Some researchers (Bosch, 2009; Ophus & Abbitt, 2009) don't discount the possible integration of and learning opportunities Facebook can provide into university courses. Three such benefits include increased communication among students and teachers, greater access to course materials, and improved logistical management of courses. Such a tool also has the potential to enhance 'competency' and 'motivation' among students in their subjects (Low & Warawudhi, 2016).

The results of some studies (Bosch, 2009; Low & Warawudhi, 2016; McCarthy, 2010; 2012; Naidu, 2005; Ng & Wong, 2013) have also revealed the effectiveness of integrating Facebook into the learning environment and the positive reception it has received from students. O'Mara and Harris (2016) also argue the effectiveness of online pedagogies such as Facebook and YouTube in bridging educational, cultural and gender gaps by applying them in a way that can engage with "communication preferences and discourses of culture, ethnicity and digital media technology" (p. 639). Facebook is also viewed by some researchers as a potential tool to assist and enhance learners' active participation and critical thinking (Prescott, 2014). Counter to this argument are issues of content ownership, privacy, virtual integrity, students keeping on track and its possible effect on academic performance (Kirschner & Karpinski, 2010; McCarthy, 2012; Shafie, Nayan, & Osman, 2012; Willems & Bateman, 2011). However, incorporation of

these resources into teaching and learning makes the classroom more diverse and may satisfy their course delivery as they are able to integrate their course requirement with social networking tools that students are familiar with and engaged. As stated in its official site (https://www.facebook.com/business/news/New-Ways-for-Marketers-to-Build-Their-Brands-on-Facebook), “video on Facebook combines the power of sight, sound and motion with unparalleled reach, mobile engagement and fine-grained targeting capabilities”. In addition, it claims that “more than 65% of all views are happening on mobile devices as people turn to Facebook at different times and places throughout the day” which reveals its flexibility and compatibility with different devices.

3.1.2.3 Twitter

Twitter, as a new emerging channel for collaboration and communication, is another social networking platform that was introduced as part of Web 2.0 technologies and launched in 2006. Twitter has recently gone under an increasingly rapid growth and has been known as a ‘microblogging’ or ‘short message service [SMS]’ platform as well as a ‘real-time information network’ (Bista, 2015; Johnson, 2011; Junco, Elavsky, & Heiberger, 2013; Lee & Markey, 2014; Prestridge, 2014; Tur & Marín, 2015; Yolcu, 2013). Twitter allows its registered users to post up to 140 characters about any topic that can be accessed over the website through SMS text messages on mobile or smart phones (Lee & Markey, 2014; Lowe & Laffey, 2011; Tur & Marín, 2015). Twitter users can also add links to photos or videos to their text messages (tweets) (Prestridge, 2014). Despite the restricted number of 140 characters, Lowe and Laffey (2011) recommend the use of URL shorteners such as https://bitly.com/ to augment the tweets.

Twitter has gained its popularity for many reasons. According to Morgan (2014a), teaching with Twitter offers both university and school students many advantages such as: creating more

opportunities for students to express their thoughts, improve their digital literacy, boost their collaboration, and enhance their literacy skills (e.g., reading, writing). It can also enhance and quicken the communication between administrators and parents. Moreover, Twitter provides communication among people with no Internet access as they can receive text messages by creating their own Twitter account in the site (Evans, 2014). In addition, Twitter can be used as a tool to connect experts across different disciplines and institutions and assist them through their writing process. As such, they can use Twitter as a forum to share their ideas and receive prompt assessment of their interest and new ideas (Choo et al., 2015). In addition, it is argued that the platform may increase "the learning experience by providing an environment to share resources, connect with others, enhance communications, and provide a space to post personal feelings or reflections of learning in an informal and quick manner" (Liu, McKelroy, Kang, Harron, & Liu, 2016, p. 13).

Counter to the argument about Twitter as a mainstream platform are issues of privacy, productivity, professionalism, level of uncertainty about the required effort to make the use of Twitter meaningful, and the lack of clarity about the advantages that would best suit the users' needs. These issues have relatively surrounded and slowed the adoption of this tool in the academic environment despite the aforementioned advantages (Choo et al., 2015; Sterling, 2016). However, using such platforms in learning and teaching is noteworthy given that many students and lecturers are increasingly using them as a means of communication. It should also be noted that using a platform in an educational setting is highly dependent upon its functionality and the lecturer's purposes (Al-Bahrani & Patel, 2015). According to Mewburn and Thompson (cited in Stewart, 2015),

> Blogging is now part of a complex online 'attention economy' where social media like Twitter and Facebook are not merely dumb 'echo chambers' but a massive global conversation which can help your work travel much further than you might initially think. (p. 288)

3.1.2.4 LinkedIn

Founded in 2002 and officially launched on May 5, 2003, LinkedIn (https://www.linkedin.com/) is a form of social network that hosts a community of users and connects them together. LinkedIn is the world's largest professional network on the Internet with over 400 million members worldwide (in over 200 countries and territories) in 24 languages (https://press.linkedin.com/about-linkedin, access date: 29 February 2016). LinkedIn members can collaborate through private messaging or group. They can create their own profile and post their online resume to showcase their work experience, skills and education and network with professionals in their field. The program is also compatible with other social media sites such as Slideshare.net and Tweeter (Delello, McWhorter, & Camp, 2015). In addition, there are almost 500,000 LinkedIn Groups joining professional communities together based on the users' aims, interests and experience (Riley, 2011).

3.1.2.5 Blogs

A Weblog or blog is a social networking platform that emerged in the 1990s. Blogs provide users the opportunity to dialog, exchange ideas, and find answers to their questions. Blogs are defined as "frequently updated, reverse-chronological entries on a single webpage" (Blood, 2004, p. 53). It is also defined as a website tool that is "updated regularly and frequently, with content about almost anything" (Wright-Porto, 2011, p. xviii). Blogs are typically easy to use websites to express thoughts and ideas about a topic allowing users to comment and trackback on postings (Soomro et al., 2015). Three popular and free examples of blogging sites are Blogger, TypePad and WordPress.

The growth and popularity of blogs have made them the fourth networking application following Bulletin board system (BBS), Email, and ICQ (an open source instant

messaging program developed in 1996) (Chhabra & Sharma, 2013). There are several impetuses behind the popularity and growth of blogs. For instance, Cain and Fox (2009) claim that the ability to express ideas and thought freely in a worldwide accessible internet-based environment and the reader's ability to comment and respond to postings are two drivers behind the popularity of blogs. Chhabra and Sharma (2013) suggest that blogs offer the opportunity to stay closely connected to the massive global information resources that led to its popularity. They also attribute the popularity of blogs to the online community advancements and easy-to-use tools that facilitate blogging to everyone. In addition, Freeman and Brett (2012) address several specific benefits of using blogs in educational settings. These include:

- They are inexpensive or even free, thus available at minimum or no operating cost
- Easy to use, thus no overhead to become skilled to use blogs
- Encourages non-communicators to communicate
- A quick mechanism to post thoughts and opinions (p. 1032)

As an educational resource, blogging has captured the attention of both educators and students through sharing high-quality multimedia learning contents (Chhabra & Sharma, 2013). Blogs facilitate effective teaching and knowledge sharing. They have the potential to enhance collaboration, reflection, and critical thinking (Ciampa & Gallagher, 2015; Wickens, Manderino, & Glover, 2015). Blogs have been used in the classroom for several pedagogical purposes and advantages including motivating students' critical thinking abilities and as a place for students to express their thoughts and a reflection of their learning experiences (Soomro et al., 2015). According to Abdelmalak (2015) and Montero-Fleta and Pérez-Sabater (2016), blogs have brought students the opportunity to communicate with their peers via reading and commenting on their postings and to stay up-to-date in their studies. Moreover, Domine (2012) addresses more advantages such as facilitating "complex thinking skills, online collaboration, and classroom practice" (p. 389). The collaborative environment of blogs has also been credited

with giving all students the opportunity to talk in a less threatening environment that frees the classroom discussion through the non-class hour dialogs (Cain & Fox, 2009). In addition, they have the ability to crystalize learning and create a space in which "a greater understanding of meaning making can be gained" (Paulus, Payne, & Jahns, 2009, p. 13). Along with these benefits, blogs can also enhance both students and educators' practice due to several features that they provide including realism, interactivity and multimedia (Montero-Fleta & Pérez-Sabater, 2016). Regardless of the many advantages of such digital resources, Burgess (2006) appoints, "because of the ongoing and accretive practice that constitutes blogging, it is ultimately up to the students to determine for themselves their preferred format (length and style of post, frequency of posting, and depth of engagement with external materials)" (p. 107).

3.1.2.6 Wikis

In a like manner, Wikis are another type of Web 2.0 online tools. The Wikis stand for 'What I Know Is' (Soomro et al., 2015) and have been used in educational settings for several reasons. For example, Cain and Fox (2009) claim that wikis are an active, developing, and collaborative medium constructed by providers who add content to a particular topic and support and evaluate their argument by authoritative resources. In other words, wikis are group-oriented, and social content management tools providing users the opportunity to add, edit, and delete contents and collaborate toward a common goal. As such, learners can practice and develop their critical-thinking skills. Other benefits of Wikis as addressed by Lambert and Fisher (cited in Abdelmalak, 2015) include "interaction, creativity, virtual collaboration, resource sharing, joint authorship, seamless integration of Internet-based content, and ease of use" (p. 5). Wikis are defined as collaborative applications that are commonly used for "knowledge sharing, knowledge creation, and collaboration on research and other projects" (Emmanuel, Evelyn, & Vera Zaccheaus, 2013, p. 175).

Wikipedia, a free online encyclopedia having millions of articles in different languages, is the most popular example of Wikis. Apart from its benefits, it has been shown to have the disadvantage of limited scope and inappropriate application of content. Further, Wiki users can post inaccurate information that could damage the accuracy of the data in a Wiki page. For instance, Cain and Fox (2009) exemplify intentional/purposeful deletion of significant information of drug companies to reduce the apparent risk of their products. A solution to make this difficult task more manageable is to use the socially-driven editing system of the tool providing the opportunity to remove inaccurate information. Some other issues, impacting a successful integration of Wikis, as collected by Karvounidis, Chimos, Bersimis, and Douligeris (2014) are communication, pedagogy, technology, organization and subject matter. As such, they recommend pre-use training and educators' avoidance of directly asking students to collaborate mutually before guiding them into a professional field.

3.1.2.7 Bulletin Boards

The advent of online learning technologies and their popularity have changed the way that today's classrooms look or work. The traditional learning environments have been replaced by their non-traditional counterparts. Although there are many differences between the traditional face-to-face and non-traditional classroom, the importance of classroom discussion has remained constant (Hall, 2015). Historically, classroom discussions existed before internet-based technologies such as bulletin board systems (BBS). For 21st century students, often studying externally or in blended mode, it is vital to take advantage of technologies having the same discussion opportunities and interaction for their learning. As such, online bulletin boards or discussion boards are considered to be one of the most common way students can participate in classroom discussions at times convenient to them. These technologies provide online students a forum for them to collaborate and share their ideas with their peers as well as serving

to supplement traditional face-to-face classes (Hall, 2015). According to Ferriman (2013), online bulletin boards equip students and teachers "with a set of tools to interact with each other over the internet. They are often hosted within LMSs such as Blackboard, Moodle, and Desire2learn" (p. 245). Basically, a bulletin board has been defined as a place to leave messages for others to read. However, the arrival of web-based technology, has made it more powerful as it enables students to participate at their own convenient time and location. As Van Hof (2016) claims, bulletin boards promote the learning environment and help consolidate learning and problem solving. Further, she states that they can be "easily adapted to levels of ability, grade, and complexity; [and can] offer students real-world connections and engaging ways to interact with peers" (p. 384). In addition to sharing ideas and information, they provide opportunities to facilitate critical reflection (Kang, Choi, & Lee, 2013).

As with any learning environment, online discussion boards have some disadvantages. Hall (2015) enumerates "boredom, inattentiveness, frustration, lack of participation, and feelings of isolation" as some of the disadvantages of the online discussion experience (p. 22). Slowing discussions because of students' lack of interest or experience is also a common challenge for educators. Consequently, Brooks and Jeong (2006) state that "… studies still find that students rarely respond to one another's points, often repeat points already made by other students, and often produce discussions that lack coherence and depth" (p. 372). Depending on the size of the class and the number of posts, some researchers (McCarthy, Smith, & Deluca, 2010) are aware of too many posts being created which might lead to loss of attention from the majority of students. As such, they state that the quality of discussions will suffer if not followed or responded to. To overcome these barriers, careful planning and implementation, assessment of students work and ensuring high quality discussions are recommended (McCarthy et al., 2010).

3.1.3 Massive Open Online Courses

The shift to a demand-driven system has intensified competition among multiple providers of higher education programs. This could put universities under pressure because students have more choice and the universities must provide high quality education to win the attention of students. Massive Open Online Courses (MOOCs) are a relatively recent online learning phenomenon. A MOOC is a free course delivered through the net to a large number of students and they were first introduced in 2008 by Dave Cormier (Hew & Cheung, 2014; NMC, 2013; Pomerol, Epelboin, & Thoury, 2015; Porter, 2015; Yuan & Powell, 2013). The existing wave began in 2011 by the university of Stanford (Macleod, Sinclair, Haywood, & Woodgate, 2016; Pomerol et al., 2015; Vardi, 2012) and was followed rapidly by the big three companies namely Coursera, edX and Udacity (Hew & Cheung, 2014; Lin, Lin, & Hung, 2015; Macleod et al., 2016; NMC, 2013; NYT, 2012; Pomerol et al., 2015). For instance, Coursera, as one of the largest MOOCs providers, is offering 1880 courses from 143 institutions across 28 countries as of March 2016 (https://www.coursera.org/about/ partners).

Over the last eight years, many prestigious universities have introduced MOOCs (e.g., Harvard, Stanford, MIT, Berkeley), with many more investigating the feasibility of this mode of education (Evans & Myrick, 2015; NMC, 2013; Paldy, 2013). MOOCs have received considerable attention from the media and press coverage which might have altered perceptions of higher education subjects and other online offerings. According to a recent report released by Allen and Seaman (2013), 2.6 percent of higher education institutions currently have a MOOC, while another 9.4 percent report MOOCs are in the planning stages. Although a recent 2015 report released by the Sloan Consortium shows that “most institutions have decided against a MOOC or remain undecided” (Allen & Seaman, 2015, p. 6), the recent Sloan Consortium survey reveals that the number of higher education institutes with MOOC have

increased from 2.6 percent in 2012 to 5.0 percent in 2013, and to 8.0 percent in 2014. The Sloan Consortium survey of online learning reveals an increase in the number of US students from 1.6 million online students in 2002 to 7.1 million in 2013 (Allen & Seaman, 2014; Porter, 2015). As such, MOOCs have the potential to multiply that number of students because of it being free and an open platform (Evans & Myrick, 2015). Hew and Cheung (2014), addressing students' reasons of enrolment in MOOCs, suggest students' have a curiosity about MOOCS, have an interest to learn a new topic and extend their knowledge, have a need to personally challenge themselves, and obtain more certificates.

Through MOOCs, universities attempt to reach a wide and diverse range of learners who otherwise may not have the chance to set foot on a university or college or may not care about credits. Yuan and Powell (2013) define two key features for MOOCs contrary to traditional university online courses: a) open and free access to education; and b) scalability (support for an indefinite number of participants). Advocates of the MOOCs believe that it can offer educational benefits to both academics and students and widen access and participation in education. For instance, some believe that MOOCs assist students in a way not to be worried about the cost of education or the restrictions made by time and distance (NMC, 2013; Warugaba, Naughton, Bethany Hedt, Muhirwa, & Amoroso, 2016). The subjects in MOOCs are offered for free and can accommodate large numbers of worldwide users without any commitment or prior requirements (Barak, Watted, & Haick, 2016; Hew & Cheung, 2014; Perna et al., 2014). Because of low barricades to registration, MOOCs have attracted a large number of people from different backgrounds and interest (DeBoer, Ho, Stump, & Breslow, 2014). For instance, the opportunity to advance and continue learning at zero cost has offered both students and professionals the ability to obtain the required new skills and advance their knowledge and their employability chances (NMC, 2013).

Despite the recent growth and popularity of MOOCs among some universities, and its features, there are still many prestigious universities such as Oxford and Cambridge that have not yet decided to adopt MOOCs. To date, there are still a number of unresolved issues including, the market value of certification of courses (Cooper & Sahami, 2013; Yuan & Powell, 2013), lack of credit awards (Yuan & Powell, 2013), absence of serious pedagogy (Vardi, 2012) and high attrition rates. Although some universities view MOOCs as an excellent marketing opportunity, many academics and higher education institutions remain unconvinced regarding MOOCs' efficacy in a higher education context. Some skeptics also claim that MOOCs would disrupt less prestigious educational institutes, escalating the risk of further budget cuts (Hew & Cheung, 2014). According to Vardi (2012) "the enormous buzz about MOOCs is not due to the technology's intrinsic educational value, but due to the seductive possibilities of lower costs" (p. 5). In short, the successful implementation of MOOCs needs to be embedded into a university's strategic plan, along with clear quality assurance arrangements as well as outlining how they may articulate with other study pathways.

Another factor pertinent to the success of MOOCs is the way students engage with it. In fact, the real question for MOOCs is whether they can offer effective education alternatives given that the relationship between their design and student engagement in formal university qualifications is still unclear. A recent study reports low completion rates for MOOC users and only about 50% of enrolled students viewing the lecture content (DeBoer et al., 2014; Lewin, 2013). Various empirical studies (Evans & Myrick, 2015; Lin et al., 2015; Liyanagunawardena, Adams, & Williams, 2013) show extremely low completion rates of MOOCs, from 7 to 13 percent, for the majority of students. Lack of motivation and the extreme number of students are considered as two possible factors attributed to the low completion rate of MOOCs (Lin et al., 2015). Moreover, Hew and Cheung (2014) enumerates "lack of incentive, failure to

understand the content material,…having no one to turn to for help, and having other priorities to fulfil" (p. 45) among the reasons of dropouts. This would suggest that learners may require scaffolding and monitoring as they progress through the MOOCs. Accordingly Buchanan (2013) states that although MOOCs make "no distinction between knowledge obtained from an online course or through prior learning, educators need to ensure that the education that is received is not watered down to fit the circumstances. That would be a great disservice not only to the individual but also to society in general" (p. 62). Thus, critics ask for examination of the new approaches "through a critical lens" to make sure about their effectiveness (NMC, 2013, p. 4).

In summary, the higher education sector has embraced the online medium and it has opened up more possibilities for learning and teaching. Indeed, higher education institutes face several challenges. Leading the list is the primary challenge to expand access and opportunity for all students to participate by reducing the cost of education (Perna et al., 2014). With the proliferation of educational technology and internet communication, and the introduction of MOOCs, an expansion of flexible online delivery of university subjects is provided in higher education to address and overcome these challenges. In this regard, the use of such online learning platforms will continue to grow both in Australia and other countries promoting the uptake of flexible delivery modes within courses and offering new means of enhancing students' learning and engagement. As MOOCs put the control of learning at the learners' discretion, Terras and Ramsay (2015) recommend understanding the learners' behavior and perception. From an educational point of view, the more disruptive challenge among higher education institutes is the need to answer the emerging technology challenges of not being left behind. However, it would appear institutes are not aware of the ways of approaching and

reacting towards these emerging educational phenomena. For example, MOOCs have the capacity to open up new educational arenas. As such, Porter (2015) states that,

> Everyone seems to have an opinion about MOOCs and whether they hold fantastic promise for the future of higher education and are likely to open up higher education qualifications to many millions of people at low or marginal cost, or whether they are simply the latest overhyped news story and an opportunity for elite institutions to get even more press coverage than usual. (p. xiii)

What is clear about the future is that the university sector in Australia is student focused. Thus, it is important to consider students' perceptions and satisfaction of the recent advancement of technology that is being integrated into their learning environment. As predicted by Tham and Werner (2005), "[t]he world has changed dramatically from earlier ages to today's highly technological world" (p. 15). Despite the fast pace of technological changes and the challenges that this brings, there does not seem to be any decrease in adoptions both at the individual or institutional levels.

3.1.3.1 Camtasia

The integration of technology into the classroom and its advances has also enhanced the way of creating videos to facilitate and enhance learning and teaching. In other words, technology integration has become a vital part of lecturers' professional learning and teaching toolbox to actively engage and motivate students in various modes of learning. An experimental method for creating videos is the use of screen-casting programs such as Camtasia (Bull, 2013; Ng'ambi, 2013; Silva, 2012; Thiele, Mai, & Post, 2014). Camtasia is a screen capture tool implemented into the classroom to capture lectures, activities, and PowerPoint presentations. It provides lecturers the opportunity to record a video via Webcam while they are orally presenting or reading an article, or a PowerPoint on a computer screen. Thus, the video can capture and record both lecturers' presentation and voice as well as any movement on the screen. Further, the lecturer can highlight words, sentences, or paragraphs while presenting

orally (Silva, 2012). Because of its narrative and video capabilities, lecturers can easily create unlimited video lengths and use the software editing capabilities. While creating Camtasia videos can be time-consuming and costly, it has been embraced among academics, and several researchers (Bull, 2013; Self, 2008) have listed unique features and benefits of Camtasia in assisting lecturers' learning and teaching. These include:

- Easy editing capabilities
- Embedding voice into PowerPoint to create online lectures
- Ability to use visual effects, such as zooming and arrows to specify certain aspects of the screen or highlighting key aspects of the content
- Using Animated content to capture students' attention
- Creating a video recording of what is on the computer screen and the Webcam that can be utilized in conjunction with PowerPoint
- Ability to create specific files for iPad, iPhone, and other devices
- Creating and sharing videos accessible via YouTube
- Ability to share digital files in FLASH and HTML
- Ability to generate a table of content to assist students to review the required areas
- Opportunity to record lectures for students who have missed class time or for content review
- Playing compatibility in various forms using Adobe Flash Player, supporting all web browsers and permitting students to pause and rewind videos
- Protecting the intellectual property of the lecturers by not allowing students to make a change or edit the PowerPoint slides when using Camtasia
- Quizzing function to assess student's understanding of videos
- Ability to embed surveys and quizzes in a video (a short video can be accompanied by a multiple-choice question on the screen)
- Ability to create "paths" through the video for students interested to cycle back to review previous segments or skip ahead
- Ability to produce videos in different output formats and options (CD-ROM, the Web, e- mail, podcast , etc.), the screen size, and other considerations

In addition, the software has come with some more "callout" features. For instance, one of the options allows users to put more focus on certain areas on the screen. Thus, the user can dim the entire screen except for a small area of focus. The user can also use "a 'highlighter' to apply a bright, bold, highlighter pen stroke to the screen" (Self, 2008, p. 506).

Camtasia Studio has also been used in the flipped classroom approach as a tool for creating videos and content reviews (Thiele et al., 2014). According to Bull (2013), “Camtasia digital interactive files promote flipping the classroom through use of video files that students watch as homework and apply concepts in the classroom” (p. 614). Thus, videos can support teaching and developing the curriculum in a flipped classroom model (Dong & Goh, 2015).

3.2 Different Modes of Delivery

Education has a crucial role in enhancing opportunities and broadening students’ minds and horizons. From an academic perspective, educators are always revising their delivery modes as they need to understand their students’ expectations and provide them the best possible educational delivery. This may include outstanding teaching that is supported by modern and appropriate technology use so as to determine that students are having a good learning experience and are engaged with their studies. Therefore, there is an extensive diversity of course delivery among individual educators. Each delivery mode has benefits, disadvantages and constraints that require lecturers to understand and utilise these nuances rather than disregard them. A brief description of three main modes namely, traditional face-to-face, online, and blended learning, is provided below.

3.2.1 Traditional Face-to-Face Learning

In a traditional classroom setting, the educator meets with students in person at a regularly scheduled time and location. This mode of delivery is also known as face-to-face instruction which includes interactions happening between students and educators in various forms of lectures, discussions, tutorials, and field trips as strategies that stimulate students’ learning experience and process (Hussain, Wang, & Rahim, 2013; Li & Irby, 2008). In fact, the origin of the ‘face-to-face instruction’ can be traced back through the centuries, from Plato and the

ancient Greeks in which learning could be evolved through "dialogue, lecture, seminar, tutorial, laboratory practical" (Keegan, 1998, p. 43). According to Allen and Seaman (2014, 2015), face-to-face learning is typically defined as a course where no online technology is used and the all content is delivered only in a traditional face-to-face setting (writing or orally). As such, the classroom is viewed as the only educational setting for teaching and learning where students could learn passively through the course material presented by the educator. In a face-to-face provision, as stated by Dabbagh and Bannan-Ritland (2005), "learners are passive recipients of information and the learning context is structured according to the instructor's viewpoint of the content" (p. 5). Thus, the focus of this direct mode of instruction is on the educator who is seen as the only expert and knowledge deliverer.

While this mode of instruction is still preferred as an effective approach in higher education settings, it is often criticized for a number of shortcomings. These deficiencies include the lack of flexibility and the failure to accommodate individuals' different learning styles and talents (Davies, Cotton, & Korte, 2016). Furthermore, the traditional modes are primarily teacher-centered where knowledge is abstract, out of context, and does not allow students' to enhance their collaborative learning, creative thinking, and deep learning. In addition, Alsaaty, Carter, Abrahams and Alshameri (2016) state that traditional face-to-face instruction tends to be time and place dependent. Thus, Davies et al. (2016) believe that if students know that the course material is available out of the classroom setting, they might learn more by focusing on understanding rather than note taking. However, with growing educational demand, limited budgets for higher education institutes to expand physical interactions, and the onset of internet and technology-enhanced facilities, the traditional method of instruction has changed. It no longer is the only available mode of teaching and learning.

3.2.2 Online Learning

Development of the internet, the World Wide Web, and transformations in educational technology over the last decades have driven teaching mode from a teacher-centred face-to-face learning mode to a student-centred online learning environment. Online learning has played an important role in higher education so as to accommodate students' needs and expectations. In this mode of learning, at least 80 percent of the course content is delivered online and students and lecturers are not required to meet each other at a specific time or place. Online education facilitates students with "pre-recorded, packaged learning materials and interaction between students and teachers takes place through some form of communication technology" (Hussain et al., 2013, p. 15). According to Allen and Seaman (2015), the definition of an online learning course has been consistent for the last twelve years. Therefore, this study uses this definition: online learning is "an open and distributed learning environment that utilizes pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction" (Dabbagh, 2005, p. 31).

The use of online learning has grown significantly both in Australia and other countries. Online learning has made it possible for the educational institutions to increase the accessibility and opportunity of learning for those whose access was limited in the past. It has also become a fast growing sector of higher education. It has provided students with the clarity to interact with their educators and peers solely through the technology affordances. Online learning has helped both "students and faculty to collaborate more freely, attain greater flexibility, and utilize new media to learn" (Reese, 2015, p. 579). As predicted by Anderson and Baskin (2002), online learning has shifted "from the domain of distance education to encompass all modes of educational delivery" (p. 136). Ten years ago, online learning almost exclusively belonged in

the province of distance delivery of education but now pre-school children engage in a range of computer activities. In 2000, some higher education subjects delivered on-campus were beginning to use the benefits of blending face-to-face with online delivery (e.g., accommodating a variety of learning styles, maintaining quality teacher-student interactions), but now all subjects at many universities and institutions of higher education mandate the inclusion of an online component, regardless of their mode. For example, the number of students who took at least one online subject was more than 1.6 million in 2002 and within six years (i.e., in 2008) the number rose by almost three-fold to 4.6 million (Allen & Seaman, 2010) with a compound annual growth rate of 19 percent. The number has also increased in their recently released report. They have announced a new total number of 7.1 million for students taking online subjects (Allen & Seaman, 2014). Although, the proportion of tertiary students taking at least one online course is recorded as being high (33.5 percent), the annual online enrolment growth rate has been recorded at its lowest (6.1 percent).

Online learning as an emerging paradigm of modern education (Anderson & Hajhashemi, 2013; Sun, Tsai, Finger, Chen, & Yeh, 2008) works best for people who are self-motivated, well-organized, and able to manage their time (Gansler, 2007; Perry & Pilati, 2011). According to Delen, Liew, and Willson (2014), this mode of learning requires students who are self-directed and engaged as "there are often fewer sources of reinforcement and prompts from instructors or peers to keep learners on task with the learning objectives" (p. 312).As the focus of instruction should be on students' achieving an effective integration of technology, Sun et al. (2008) believe that "e-learning's characteristics fulfill the requirements for learning in a modern society and have created great demand for e-learning from businesses and institutes of higher education" (p. 1184) with a growth rate of 35.6% in the worldwide e-learning market.

In a project conducted by the US Department of Education, Radford (2011), acknowledges that,

> from 2000 to 2008, the percentage of undergraduates enrolled in at least one distance education class expanded from 8 percent to 20 percent, and the percentage enrolled in a distance education degree program increased from 2 percent to 4 percent. (p. 3)

Exploring students' reasons for taking online courses, Braun (2008) claims that the most prevalent ones are related to financial reasons, flexibility, and the ability to complete course assignments, readings, and other requirements from home. Jensen (2011, p. 298) also speaks of the 'almost universal access', 'increased flexibility', and 'preference among young adults' as the factors contributing to the appeal of online courses. As such, Fedynich, Bradley, and Bradley (2015), Chohan (2014), and Fonolahi and Jokhan (2014) address flexibility and convenience as strengths of the online learning mode. Online learning provides diversity in the learners' population as it provides opportunities for working parents, non-traditional adult learners, people who live far away from educational institutes, and return students who were not able to attend the traditional 'brick and mortar' classrooms (Keengwe, Adjei-Boateng, & Diteeyont, 2013; Perry & Pilati, 2011; Reese, 2015). Some studies (e.g., Thomas, 2008) also suggest that online learning enables students "to simulate new ideas, to experiment with new ideas at one's own pace and even to fail in private without the fear of ridicule from classmates" (p. 107). Cost effectiveness and ability to offer learning in a global classroom are other advantages of online learning that have appealed to university administrators (Fonolahi et al., 2014; Perry & Pilati, 2011).

Online learning has the potential of generating new revenue and providing learning opportunities for those with limited access to traditional courses. It has also highlighted the disadvantage of high dropout rates, lack of community, and failure in the competitive market

(Angelino, Williams, & Natvig, 2007; Deperlioglu & Kose, 2013; Perry & Pilati, 2011; Sun et al., 2008). Due to the absence of face-to-face encounters among educators and students, online learning has confronted the lack of social presence and meaningful interactions (Chohan, 2014; Keengwe et al., 2013). As such, Perry and Pilati (2011) state that while the online learning mode requires more self-reliance to work with the course materials, the attrition rates in online subjects are 10 to 20 percent higher than their traditional face-to-face counterparts. Conversely, Reese (2015) looks at the students' independence to work with the content and tracking the weekly assignments through virtual tools as an advantage. She believes that it adds up to students' skills and they learn "the power of clear and concise written communication, and developing the skills to collaborate with peers and instructors in a different type of environment" (pp. 581-582). Some users stop their online learning after an initial experience for unknown reasons (Sun et al., 2008). Curless (2004) enumerates lack of finance and time, isolation and lack of self-discipline and motivation among the reasons of dropouts. Gansler (2007) further states that in a traditional face-to-face learning environment (a classroom with a small group) immediate feedback is available through body language or facial expression. In comparison, in online learning the responsibility lies with students to ask the teacher for help when they need more clarification or explanation. Some other weaknesses of online learning as reported by Fedynich et al. (2015) are "the delay of responses, lack of community, difficulty understanding instructional goals, and technical problems" (p. 2).

Contention exists about which mode of learning delivery is superior. While some believe a face-to-face mode of instruction is superior to an online mode of delivery, others suggest that online courses should be used as a replacement or supplement to face-to-face classes. A third argument is that a blended learning experience that integrates technology-media and web-based applications is superior. As defined by Bath and Bourke (2010), blended learning is "effectively

integrating ICTs into course design to enhance the teaching and learning experiences for students and teachers" (p. 1). Further, the authors state that blended learning engages both teachers and students "in ways that would not normally be available or effective in their usual environment" (p. 1). Two recent research publications (Angiello, 2010; Bakia, Shear, Toyama, & Lasseter, 2012) have reported on this issue. The findings of both meta-analysis reports reveal that the performance of students taking all or part of their courses online is better than their face-to-face counterparts. Likewise, they report that a combination of online and face-to-face instruction has more advantage relative to merely face-to-face instruction or solely online instruction. More explanation on blended learning is provided below.

3.2.3 Blended Learning

Blended learning, also known as hybrid or mixed-mode learning, is a combination of two archetypes of traditional face-to-face and online learning environments that have proven their instructional content delivery to various learners. Although in existence for over fifteen years, the debate about the meaning of blended learning is still continuing and thus, agreement on a fixed definition remains elusive. According to Garrison and Vaughan (2008), blended learning is "the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies" (p. 148). Based on the various attempts to define the term in the literature, a few of the many definitions of blended learning are provided in the following.

- A learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of program delivery (Singh & Reed, 2001, p. 1).
- The term blended learning means:
    1. To combine or mix modes of web-based technology (e.g., live virtual classroom, self-paced instruction, collaborative learning, streaming video, audio, and text) to accomplish an educational goal.
    2. To combine various pedagogical approaches (e.g., constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or without instructional technology.
    3. To combine any form of instructional technology (e.g., videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training.

4. To mix or combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working. (Driscoll, 2002, p. 1)

- Blended learning basically refers to (at least) the mix of different:
    - Didactical methods (expository presentations, discovery learning, cooperative learning, etc.); and
    - Delivery formats (personal communication, publishing, broadcasting, etc.). (Kerres & Witt, 2003, p. 103)
- 'The term "blended learning" refers to courses that combine face-to-face classroom instruction with online learning and reduced classroom contact hours (reduced seat time) (Dziuban, Hartman, & Moskal, 2004, p. 2)
- A "course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has some face-to-face meetings" (Allen & Seaman, 2014, p. 6; 2015, p. 7).They also state that in blended learning courses, between 30 and 79 percent of the course content is delivered online.
- The integration of face-to-face and online learning to help enhance the classroom experience and extend learning through the innovative use of information and communications technology. Blended strategies enhance student engagement and learning through online activities to the course curriculum, and improve effectiveness and efficiencies by reducing lecture time. (Watson, 2008, p. 5)
- Blended learning is the thoughtful fusion of face-to-face and online learning experiences. The basic principle is that face-to-face oral communication and online written communication are optimally integrated such that the strengths of each are blended into a unique learning experience congruent with the context and intended educational purpose. (Garrison & Vaughan, 2008, p. 5)
- The integrated combination of traditional learning with Web-based online approaches (Motteram & Sharma, 2009, p. 90).
- Effectively integrating ICTs into course design to enhance the teaching and learning experiences for students and teachers (Bath & Bourke, 2010, p. 1).
- "Blended learning systems combine face-to-face instruction with computer mediated instruction." This enables blends across four different dimensions: space, time, fidelity, and humanness. (Graham, 2012, p. 66)
- Blended learning environments combine traditional face-to-face instruction with computer-mediated or online instruction. (Bonk & Graham, 2012, pp. 23-54)

Along with these definitions, Dziuban et al. (2004) state that,

> Blended learning should be viewed as a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically enhanced active learning possibilities of the online environment, rather than a ratio of delivery modalities. In other words, blended learning should be approached not merely as a temporal construct, but rather as a fundamental redesign of the instructional model with the following characteristics:
>
> - A shift from lecture- to student-centered instruction in which students become active and interactive learners (this shift should apply to the entire course, including face-to-face contact sessions);

- Increases in interaction between student-instructor, student-student, student-content, and student-outside resources;
- Integrated formative and summative assessment mechanisms for students and instructor." (p. 3)

The above-mentioned literature clearly reveals the breadth of definitions for the term blended learning, while reflecting that there is no single accepted definition. Although the definitions vary, they are all common in the coexistence of traditional face-to-face and technology integration for non-face-to-face learning. Thus, as Partridge, Ponting and McCay (2011) state, we can place blended learning courses offered in higher education institutes somewhere on a continuum, between fully face-to-face and fully online subjects. This study fits more with the definitions provided by Oliver and Trigwell (cited in Torrisi-Steele, 2011) as they define the term blended learning from the learning experience perspective rather than its instructional perspective. To them, "blended learning refers to enriched, student-centered learning experiences made possible by the harmonious integration of various strategies, achieved by combining f2f [face-to-face] interaction with ICT" (p. 366).

There is a range of advantages for academics and students embracing the blended learning approach over other learning methods. According to Partridge et al. (2011), these advantages can be categorised into three leading groups of: a) institutional, b) personal, and c) pedagogical. Each of these include: a) Institutional: improving the efficiency of classroom space, reducing on-campus traffic and the associated need for parking spaces, student retention is increased; b) Personal: flexibility to study at a convenient time and place that suits them, saving time and travel cost; and c) Pedagogical: enhancing students' learning experience and outcome, and increasing pedagogical richness. As such, Ginns and Ellis (2007) appoint that the overall aim of using a blended learning approach is providing "a mix of both on-line and face-to-face experiences which support each other in achieving desired learning outcomes" (p. 55).

Other researchers, Osguthorpe and Graham (cited in Graham, 2012) outline six reasons for the popularity of this approach that include: 1) ease of revision, 2) pedagogical richness, 3) social interaction, 4) cost-effectiveness, 5) access to knowledge, and 6) personal agency. Kleber (2015) and eduviews (2009) suggest that 'flexibility' and 'adaptability' are the principal advantages of utilizing a blended learning approach while keeping the benefits of a traditional face-to-face classroom setting. As such, Graham (2012) introduces three reasons for blended learning popularity among lecturers and learners. These are: a) enhanced pedagogy, b) increased flexibility and access, and c) increased cost-effectiveness.

The popularity and development of this approach has also helped higher education institutes to address students' different needs and to provide individually tailored opportunities and solutions to engage more students, to compensate space limitations in the classroom, and to reduce classroom time. In addition, blended learning plays an important role to add limited components of both traditional face-to-face and online methods. For instance, it has the advantage of integrating technology affordances to the traditional classroom environments to enhance learning, and to meet students' diversity, and also to compensate class time limitations by providing online subjects. In other words, blended learning is "a viable means for introducing asynchronous online learning in campus-based universities with little risk and minimal resistance" (Garrison & Cleveland-Innes, 2004, p. 37). In a similar vein, Wicks, Craft, Mason, Gritter, and Bolding (2015) posit that integrating technology in this approach has provided flexibility and asynchronicity that meets students' diverse learning styles and needs.

Although in existence for over fifteen years, blended learning has garnered a plethora of challenges and criticisms concerning both academics and students. Some researchers believe that blended learning is still embryonic in its development (Chew, Turner, & Jones, 2010;

Macdonald, 2008). According to Macdonald (2008) “successful blended learners will need to develop as self-directed, reflective learners.” (p. 115). Critics complain about the lack of clarity and the breadth of interpretation, positing that “almost anything can be seen as blended learning” (Oliver & Trigwell, 2005, p. 18). However, some echo the lack of having a consistent definition as the strength of this approach as “it allows staff to negotiate their own meaning for it within the context of their institution, course or student group” (Partridge et al., 2011, pp. 2-3; Sharpe, Benfield, Roberts, & Francis, 2006, p. 75). Some common issues faced by students as addressed by Vaughan (2007) are “the expectation that fewer classes meant less work, inadequate time management skills, problems with accepting responsibility for personal learning, and difficulty with more sophisticated technologies” (p. 85). To Partridge et al. (2011), the increased time commitment to prepare blended learning subjects as well as the ethical issues such as the required privacy and confidentiality to secure online resources and copyright concerns are some issues that lecturers are facing. In accordance, Vaughan (2007) lists some of the primary risk factors identified by academics teaching blended subjects as “fear of losing control over the course, lower student evaluations, and an uneasiness about how this type of learning model fits into the university culture of teaching, research, and service” (p. 88). However, as Kleber (2015) states, today’s students’ diverse needs have provided a continuous challenge to modern educators as they need to meet their students’ diversity in the fast-paced world of the technology learning environment. Such challenges may seem endless due to the lack of time, money and staff. Blended learning may not be the only solution. However, as Kleber (2015) appoints, blended learning provides “a dynamic, evolving tool that can unite students, teachers and administrators through technology with the goal of increasing learning and engagement” (p. 24). These increases in learning and engagement empower students with measurable growth in the required skills they need to compete in the ongoing challenges in higher education.

3.2.4 Flipped Classroom

The integration of technology in the classroom is rapidly changing our teaching and learning. In essence, technology is credited as a principal factor that changes the role of students into learning explorers and teachers into facilitators or guides, and enables students to take control of their learning (Armstrong, 2014). As a response to the call for technology enhanced techniques toward a more student-centered approach, many universities have encouraged academic staff to rethink the delivery method for subjects and give consideration to the further development of significant online components. For instance, lecturers at this study's university site are encouraged to include a variety of online resources in their subjects and to explore the use of a "flipped classroom" as a pedagogical response to the growing interest in technology integration in the classroom. Digital technologies can only be effective in combination with sound pedagogical approaches.

The 'flipped classroom' is an innovative pedagogical approach and is one of the latest educational techniques that has garnered a lot of attention among school-based and tertiary educators, and the media. The Flipped (FL) or inverted classroom method was described and popularized in 2007 by the innovative teaching experiment of two Colorado high school science teachers, Jonathan Bergmann and Aaron Sams (Butt, 2014; Findlay-Thompson & Mombourquette, 2014; Heyborne & Perrett, 2016; Keene, 2013; Milman, 2012; Moran & Milsom, 2015; Morgan, 2014b; Raths, 2014; Siegle, 2014; Sinouvassane & Nalini, 2016). By recording their lectures, they provided students the opportunity to view lectures at home freeing class time for deeper face-to-face learning and understanding. Indeed, the main component of this method as defined by Love, Hodge, Corritore, and Ernst (2015) is to reverse "what happens *in* the classroom with what happens *out* of the classroom" (p. 745) as compared with a traditional lecture-based classroom. In fact, the move to a flipped classroom approach has

created a number of challenges for educators because of a lack of consensus on what exactly this flipped model entails. This buzzword has been interpreted differently at the university level, in how it is structured and in the way that it has been used. Some people are interpreting it as no lectures and that some form of online material replaces the lecture and that the tutorial then becomes your workshop space. In this study, the term flipped classroom is defined as an educational technique that lecturers use to record their lectures, which provides students the opportunity to view lectures at home thus freeing class time for deeper face-to-face learning and understanding.

The ideas behind flipping a classroom is not a new concept in education (Kachka, 2012b; Moran & Milsom, 2015; Sams & Bergmann, 2013; Tucker, 2012), as students have been asked over centuries to come to class prepared by reading a section. Accordingly, they relate and pertain the method as far back as 1990s when educators didn't have access to the technology to create videos (Baker, 2000). However, as Sams and Bergmann (2013) state, "the flipped learning model simply leverages new technology to provide an audio-visual option to students as they prepare for class. More importantly, it redefines class time as a student-centered environment" (p. 17). According to Mason et al. (2013) and Ash (2012), inverting the classroom activity and offering content delivery through video lectures to be watched outside the classroom is a method that frees up class time for student-centered activities and problem-based learning. In fact, this method initiated a new way of thinking about teaching and learning by swapping homework for classroom activities.

In this method, teachers are present to provide guidance and correction when difficulties or misunderstandings happen in students' learning and problem solving. According to Butt (2014), "at the heart of the flipped classroom is moving the "delivery" of material outside of

formal class time and using formal class time for students to undertake collaborative and interactive activities relevant to that material" (p. 33). So, any use of the class time to have more access to educators and practice the concepts takes advantage of the opportunities provided by this pedagogical approach (Kachka, 2012a). In short, the flipped classroom provides students a more collaborative learning environment in which they can focus more on working through problems with peers and teachers. Accordingly, Bergmann and Sams (2012) posit,

> When you walk into our classrooms, you will see students engaged in a variety of activities using different digital devices. Students are working on our (obsolete) class computers, they are using their iPods, they are working together, they are experimenting, and they are interacting with their teacher. We encourage our students to bring in their own electronic equipment because, frankly, it is better than our school's antiquated technology. (p. 21)

Using the Flipped Classroom in teaching and learning has provided various educational benefits for both students and educators. According to Sams and Bergmann (2013), applying this method assists educators to move away from direct instruction to a more student-centered approach. Mason, Shuman, and Cook (2013) list three benefits for using the Flipped Classroom approach. These advantages include, a) freeing up class time for interactive activities and problem-based learning, b) allowing educators to present material in different ways to engage students with different learning needs and styles, and c) encouraging students to be self-learners. Other benefits of the flipped classroom as addressed by Álvarez (2012) include:

- Notes are now available at home for students who were absent.
- Students are less frustrated and disruptive in class because there is someone on hand to help one-on-one.
- A much larger percentage of assignments are completed and to a much higher quality.
- When an educator is absent (p. 20)

Flipping the classroom permits educators to teach both content and process (Findlay-Thompson & Mombourquette, 2014). As such, it enables educators to move "from the 'sage on the stage' to the 'guide on the side'" (King, 1993, p. 30; Siegle, 2014, p. 51). As such, a

"sage on the stage" has been defined as "an instructor who imparts knowledge on the student through lecture alone", whereas a "guide on the side" is responsible to assist and correct students "to explore the content independently or within a group" (Gilboy, Heinerichs, & Pazzaglia, 2015, p. 109). It also provides the opportunity for educators to interact and collaborate with their colleagues and share videos among themselves. Hence, they can find out the most applicable teaching styles for their students (Morgan, 2014b). This method has proven to be an effective addition to the education of gifted and talented students and to maximize their academic growth (Siegle, 2014). When used effectively, the method provides more opportunities for students to work at an appropriate pace, and educators have more chances to assist students with difficult content (Morgan, 2014b). In addition, the approach may be useful to those students who miss the class and/or get little help with their studies because of budget problems. Flipping the classroom provides them the opportunity to have access to course material at any time (Morgan, 2014b).

Although there are persuasive reasons to utilize the flipped classroom approach, it has garnered some criticism. Some researchers (Ash, 2012; Morgan, 2014b) believe the method is nothing more than a high-tech version of a lecture. Critics complain that the important aspects of good teaching is neglected in this method (Morgan, 2014b). Some other issues as outlined by Findlay-Thompson and Mombourquette (2014) are: creating a big gap between high and low-income students, internet access problem especially in the rural areas, limited budget of educational institutes and the costly required software access, the required training sessions for teachers on how to use the software and to structure a flipped classroom, and the required self-learning reliance and motivation from students in this non-traditional method. Another primary concern is how to cover a concept in a short, concise, and bite-sized chunk (Tucker, 2012).

Although the principle of this method is simple, there are a multitude of ways of flipping the classroom as methods differ by subjects and educational philosophy (Ash, 2012; Raths, 2014). While some educators assign a video for students to be watched at home, others ask students to watch them in class. Moreover, some videos of lessons are simply optional for students to watch as they just include a variety of resources and information for students. However, as promising as the flipping classroom approach sounds, it cannot be implemented effectively if students and educators alike do not have the required technology literacy to make it work or if they are not motivated to participate in this mode of learning. In fact, the classroom environment has become a generational challenge for both students and lecturers based on their various level of proficiency and reliance on technology. As such, Berrett (2012) states, "content is not going to be the thing we do. We're going to help unpack that content" (p. 38). In short, although it has garnered a lot of attention of late, it alone does not increase students' success. As a newly introduced educational trend, it is important to identify what determines successful implementation of ICT for augmented learning and the practicality of the flipped classroom in ensuring students have gained knowledge to build upon in later study units.

3.2.5 Perceptions of Online Video Integration

Several researchers made use of different videos in their studies. As a consequence of these attempts, each researcher came up with a unique finding that has shed light on the importance of this technology-enhanced application in educational settings. The major focus of these studies has been in nursing or medical settings (e.g., Alliex & Das, 2010; El-Sayed & El-Sayed, 2013; Garrett-Wright & Abell, 2011; Jang & Kim, 2014; Logan, 2012; Miller, 2014; O'Flaherty & Timms, 2015; Wall Parilo & Parsh, 2014; Wang et al., 2010; Woodham et al., 2015) or video games (e.g., Bourgonjon et al., 2010; Marino et al., 2013) and there were also a few on video use in teaching mathematics to engineering students (e.g., Kinnari-Korpela,

2015). To the best of the researcher's knowledge, not a single study has been reported on Australian tertiary learners' online video use thus far. One of the aims of the present study was to assess both students' and lecturers' perceptions of the use of "online videos" that educators employ in their teaching. This section reviews some major and recent studies conducted with a similar purpose.

Kinnari-Korpela (2015) conducted a study to investigate the use of short video lectures to enhance mathematics learning for engineering students. The participants were mostly first year students majoring in mechanical engineering and electrical engineering at a university in Finland. She explored students' mathematics experiences from videos. Further, she studied the influence of video lectures on learners' motivation towards mathematics. According to the results, most students were positively encouraging the use of short video lecturing in their subject and reported their satisfaction with the use of videos in mathematics as a stimulus to increase their motivation towards their learning. Although the study confirmed that students still need to attend the classroom and would prefer direct interaction, mathematically low proficient students would enjoy the advantages provided by videos including the time flexibility and watching the videos several times to understand the concept.

Creating an interactive virtual patient case for problem-based learning (PBL), Woodham, Ellaway, Round, and Vaughan (2015) tried to investigate the perceptions and experiences of both medical undergraduate students and their tutors of videos and text-based materials. The findings suggest that text materials were perceived to be a good source of information rather than the PBL virtual videos. In addition, videos were found more advantageous for providing more details, visual information and context where text materials were unable to do so. However, the findings still retained the interest and preference of students for text materials in

PBL context and particularly for training clinical reasoning skills. Furthermore, it was revealed that video use makes the pace of PBL slow and hinders learners' capacity to review and appraise the provided information critically.

Jang and Kim (2014), exploring the use of online clinical videos for training the required skills in medical students, examined the students' perceptions of videos as well as the benefits and challenges they might have experienced. Running a mixed methods approach, the findings revealed the overall positive influence of videos on students' clinical learning skills. Due to the findings, the study suggests lecturers consider the preference of their students and integrate these learning resources into their teaching methods. Such integration can provide more interactive tools catering for students' needs and facilitate their learning and interactions.

In a similar vein, van Duijn, Swanick, and Donald (2014) conducted their study to investigate their students' psychomotor skills via online video instruction versus traditional face-to-face instruction. In addition, they aimed to explore the effect of adding online video instruction before or after traditional instruction of these skills. For this reason, they collected data from 53 professional physical therapist students in an experimental study. The results revealed no significant difference in group performance of students after the 2nd instructional session. However, their performance improved significantly after the 2nd instructional session compared to their performance after the 1st session. Moreover, no significant difference was found in their performance when receiving both traditional and video instructional methods. As such, the study suggests that employing online videos may enhance the instruction of their psychomotor skills. Accordingly, van Duijn et al. suggest there are apparent advantages of using both modes of instruction in their students' learning skills. The researchers believe that the prominent benefit of online videos could be a relatively time-efficient method to enhance the experience

of students in a traditional setting, and in place of the face-to-face mode of learning when there are geographic or economic issues.

As can be seen, although being different in their focus, discipline and purpose, the common point of these studies is employing online videos. As a consequence, certain findings of their research vis-à-vis videos relate them to the present research and hence, are worth considering. However, they were all carried out in other countries and disciplines. Further, they have rarely focused on the type and purposes of videos that lecturers employ. Despite seeking students' perceptions on how and why they use online videos in different modes of delivery and how their engagement could be enhanced, the afore-mentioned studies have just focused on motivational benefits of videos and have ignored inspecting other aspects of video use.

3.2.6 Perceptions of Multiple Intelligences

Research on multiple intelligences (MI) has revealed certain similarities and differences. To put it in another way, acknowledging the discrepancies among studies, certain differences have been documented and identified between these studies. This section provides a review of some recent studies on MI in different countries and disciplines.

Perhaps McKethan, Rabinowitz and Kemodle (2010) and Lopez and Patron (2012) were among the first researchers who investigated the MI of students in different modes of delivery. For example, Lopez and Patron (2012) conducted a quantitative study to explore different intelligences that students use in their Business Statistics courses. The study aimed to collect data through a survey from 128 males and females. The data were collected from four classes, including two face-to-face, one online and one blended learning mode of delivery. Descriptive statistics of the findings revealed that students were higher in interpersonal intelligence and

lower in verbal-linguistic and visual-spatial intelligences. Musical-rhythmic and logical-mathematical intelligences were other dominant intelligences of students. Further analysis on intelligence types and gender revealed no significant difference between male and female participants as they were high in interpersonal intelligence and low in visual-spatial intelligence. In addition, the *t* test and Wilcoxon tests showed that face-to-face students, compared to their counterparts in blended and online classrooms, are weaker in intrapersonal and interpersonal intelligences. However, no significant difference was found between these two intelligences in blended and online classrooms. Online students were found to be higher in logical-mathematical intelligence compared to the students in blended and face-to-face modes of learning. As such, Lopez and Patron suggest instructors use more interpersonal techniques such as online discussion groups and wikis in their online teaching.

In their study, McKethan, Rabinowitz and Kemodle (2010) investigated the MI of students in online and traditional skill instructional learning environments. The researchers focused more on how MI correlate to traditional face-to-face and online learning settings and also the effectiveness of learning with and without an authority figure. Accordingly, sixty-eight tertiary students aged 18 to 21 were randomly selected and assigned into four groups namely, traditional (n=17), online learning without (n=16) and with (n=16) an authority figure, and control group (n=19). The researchers used Multiple Intelligence Developmental Assessment Scale (MIDAS) for collecting data. The results suggest that an online setting is more suited for students with verbal-linguistic, bodily-kinesthetic and musical-rhythmical intelligences. The findings revealed that students with a stronger verbal-linguistic intelligence are more interested to excel in online settings where accuracy and skill is needed. However, when extensive form acquisition components were needed, the traditional face-to-face setting was more effective. Furthermore, it was revealed that face-to-face instruction correlated more with the MI than any

aforementioned groups, suggesting that the possible superiority of traditional methods over the online learning.

In a similar vein, Meneviş and Özad (2014) carried out a quantitative study to investigate the influence of age and gender on MI. The participants were 517 high school students of both genders in grades 10 to 12 and aged 15 to 17 years old. Based on the results, a significant difference was found between verbal-linguistic, bodily-kinesthetic, existential, musical-rhythmic, interpersonal, intrapersonal and naturalist intelligences of students and their gender. Similarly, a significant difference was found between the age and visual-spatial, logical-mathematical, intrapersonal, naturalist and existential intelligences.

Investigating the perceptions of traditional and adult students regarding seven intelligences introduced by Gardner in 1983, Tai (2014) embarked on a quantitative study in which the researcher collected data from 174 full-time traditional (n=95) and non-traditional (n=79) students. They were selected randomly from both English and Adult Education of English departments at Feng Chia University in Taiwan. The findings revealed a significant difference between traditional and adult students in terms of their predominant intelligences. Furthermore, both traditional and non-traditional students were strong in verbal-linguistic and low in bodily-kinesthetic and musical-rhythmic intelligences. It was also found that there were four bivariate correlations existing in the perceptions of English traditional students. These included verbal-linguistic and intrapersonal intelligences, verbal-linguistic and interpersonal intelligences, interpersonal and visual-spatial intelligences and intrapersonal and bodily-kinesthetic intelligences. Further investigation also revealed three bivariate correlations between non-traditional adult students. They were visual-spatial and musical intelligences, visual-spatial and logical-mathematical intelligences, and intrapersonal and interpersonal intelligences.

As reflected in the aforementioned studies, most studies have focused on a quantitative approach and have ignored collecting students' perceptions on various intelligences utilized in their learning. These findings were all carried out in other countries and were collected from a small sample of students in different settings and disciplines. The MI questionnaire was also another factor that could affect findings. As a consequence of these attempts, each researcher has come up with a different finding. Criticism about this theory has been dealt with in Chapter 2, Section 2.1.5.10.

3.2.7 Today's multi-generational students

With increasing growth in traditional and non-traditional students' enrolment, today's higher education environment includes a diverse range of age groups. As such, the principal concern throughout the educational communities is to address the current multi-generational tertiary students' capabilities and to highlight the importance of their learning needs. Such concern must be based on a thorough understanding of five common generational cohorts, defined by Tapscott (2009), to be known as Pre Boomers, the Baby Boom Generation, Generation X, Net Generation, and Generation Next students who are attending the higher education institutes, schools or the workplace. The classification of these common generational cohorts has been made by various researchers on the basis of their birth dates. Unfortunately there are some inconsistencies in the classifications with regards to the dates and descriptions. For instance, Oblinger and Oblinger (2005a) classified generations as Matures/greatest generation (1900-1946), Baby Boomers/Me generation (1946-1964), Generation X/Latchkey generation (1965-1982), and Net Generation/Millennials (1982-1991). Howe and Strauss (2007) classified the generations into five groups namely, GI generation (1901-1924), Silent generation (1925-1942), Boomers (1943-1960), Generation X (1961-1981) and Millennials (1982 to roughly 2005). Hence, it is important to understand some demographic information about these

generational cohorts. Table 3.1 in the following provides a comprehensive comparison and classification of today's generations that were described by different researchers defining their birth dates and characteristics.

Table 3-1: A comprehensive overview of five generations

Generation	Other Terms	Birth Date	Individual Characteristics	Group Characteristics	Other Attributes
Pre-Boomers	Traditionalists or Traditional Generation **[1, 2]** Silent Generation **[2, 3]** Greatest generation **[2, 4]** Matures **[4]**	1925-1942 **[2, 3]** 1900-1946 **[4]**	Committed Involvement in Community affairs Conforming Dedicated Family-oriented Respectful of authority Rule-Obedient	Civically responsible Conformity Cooperative Loyal Nationalistic Respectful of authority Self-sacrificing	
The Baby Boom Generation	Baby Boomers **[1-5]** Me generation **[4]**	1946-1964 **[1, 4-6]** 1943-1960 **[2, 3]**	Can-do attitude Competitive Individualistic Optimistic Responsible Self-sufficient Unease with technology Workaholic Work ethic	Competitive Individualistic Optimistic Questioning authority Return to religious values	
Generation X	Baby Bust [6] Digital Immigrants **[6]** Generation X **[1, 2, 4-7]** Latchkey generation **[4]** Thirteeners **[3]**	1965-1976 **[6]** 1965-1981 **[1]** 1965–1979 **[5]** 1965–1982 **[4]** 1961-1981 **[2, 3, 7]**	Aggressive communicators Challenge authority Environmentally conscious Independent Media-cantered Multitaskers Questioning the government Self-sufficient Skeptical Slightly tech comfort Well-educated work-life balance seeker	Independent Skeptical Latchkey kids Rejecting traditional values Nihilistic	***Baby Bust*** was initially used after the dramatic birth-rate decline in the 10 years following the baby boomers. The term ***Generation X*** has been taken from the title of a novel by Douglas Coupland. In his novel, X refers to a group of people feeling excluded from the society and entered to the labour force just to understand that all positions have been filled by their older brothers and sister.
Net Generation	Echo Baby Boomers **[6, 8]** Millennials. **[1-6, 9, 10]** Net Generation **[1, 2, 4-7, 9-14]** Digital Natives **[7, 15]** Net-Geners **[5, 9]** MySpace Generation **[5]** Generation M (for media) **[5]**	1977-1997 **[6]** 1982-2002 **[1, 3]** individuals born since 1982 **[13]** 1982- 2000 **[7]** 1978-1994 **[14]** Born in the 1980s **[10]** 1982-Now **[2]**	Adaptive Assertive Attachment to parents Contrarian Determined Diverse Education oriented Extremely curious Fast paced First digital age generation First digital-media surrounded generation Focused globally orientated	Achieving Confident Conventional Intuitive visual communicators and gamers Pressured Special Sheltered Team-Oriented	***Net Generation*****:** The term was coined by Tapscott, in 1997. ***Digital Natives*****:** The term was introduced by Prensky in 2001.

	Generation Y **[2, 5-7]**	Born in the 1980s and early 1990s **[5]** 1982–1991 **[4, 9, 11]**	High Self-esteem Impatient Intelligent Materialistic Multitasking Optimistic Protected Rule-followers Selfish Sense of entitlement Social networkers (e.g., Facebook, MySpace, Tweeter) Team-oriented Tech-savvy		
Generation Next	Generation Z **[6]** iGeneration, iGeners **[5]**	1998-present **[6]** Born in the 1990s and the new millennium **[5]**	First truly Tech-savvy		***iGeneration, iGeners***: Apparently, the term has been called after accessible devices and websites starting with 'i'. For example: iChat, iHome, iMac, iPad, iPhone, iPod, iTube, iTunes.

Notes:

1. Worley (2011) **2.** Junco and Mastrodicasa (2007) **3.** Coomes and DeBard (2004) **4.** Oblinger and Oblinger (2005a) **5.** Tapscott (2009)
6. Lancaster and Stillman (2002) **7.** Ismail (2010) **8.** Skiba and Barton (2006) **9.** Rosen et al. (2010) **10.** Yee (2015)
11.R. K. Smith (2014) **12.** Traphagan et al. (2012) **13.** C. Jones and Shao (2011) **14.** Barzilai-Nahona and Mason (2010) **15.** Prensky (2001)

As noted in Table 3.1, there is an overlap in years and generational terms of classifications among researchers. Thus, it is important to follow and discuss generations based on a definite classification in order to understand the interactions among them. The present study considers Tapscott's (2009) classification and terms. He has identified four generations from 1946 to the present as: a) the Baby Boom Generation (Jan 1946-Dec 1964), b) Generation X, also known as the Baby Bust (Jan 1965-Dec 1976), c) Net Generation, also called the Millennials or Generation Y (Jan1977-Dec 1997), and d) Generation Next or so-called Generation Z (Jan 1998 to present). Accordingly, the majority of today's tertiary students fall within the Net Generation category, whereas the average educators belong to the Baby Boom Generation. Worley (2011) and Oblinger (2003) claim that because of the significant difference between students and educators in accordance with their expectations, experiences, and technology skills, educators have not fully integrated new ways of providing an effective use of technology in their teaching. For instance, Oblinger (2003) posits that,

> Current higher education administrators, as well as many faculty and staff, represent a different generation from the majority of the student population. With an average faculty age of over fifty, many decision-makers in higher education graduated in the 1970s. The experiences of a 1970s generation of students are likely to be quite different from those of the current student body. (p. 38)

These multi-generational learners bring different characteristics, experiences, and expectations into the classroom. They have different interests, needs, and intelligences (Worley, 2011). For example, challenges among these multi-generational learners and their educators may consist of tech-literacy, proficiency and dependency (e.g., on internet, tech-apps). Treating multi-generational students as having similar characteristics based on their technology use and literacy is challenging (Lai & Hong, 2015). As such, educators are challenged in finding their students' generational similarities, differences and preferences so as to motivate and engage them in their learning goals. Furthermore, they are confronted in implementing the most effective teaching practices to meet students' individual needs. According to Rotellar and Cain

(2016), changes in student demographics, and web-based technologies have made the educational settings different from the past. As such, higher education institutes and educators need to examine and apply newer instructional models to capture students' individual needs and improve their learning (Rotellar & Cain, 2016; Worley, 2011). Furthermore, Pletka (2007) argues that using instructional technologies enable educators to address students' dropout and disengagement issues and enhance students' participation. One readily available solution to meet various generations is to use videos through services such as YouTube to bridge the gap between academics and multi-generational students. According to Oblinger and Oblinger (2005a), today's tertiary students are more visually literate compared with the previous generations and they need more integration of images and visual presentations in their subjects/courses. Thus, it is important to ensure that teaching methods are capturing such aspects and student needs. Moreover an explanation of both teachers' and students' perceptions of learning experiences and understanding is required. Accordingly, Oblinger and Oblinger (2005a) state that,

> Whether the Net Generation is a purely generational phenomenon or whether it is associated with technology use, there are a number of implications for colleges and universities. Most stem from the dichotomy between a Net Gen mindset and that of most faculty, staff, and administrators. (p. 2.10).

Although the students are from different generations, they still come to universities to interact with academics and peer students. Considering the importance of their interaction with academics and peers, they also need a supportive learning environment to accommodate their needs as they have different preferences in accessing information and contents. According to Prensky (2005) "our students have changed radically. Today's students are no longer the people our educational system was designed to teach" (p. 29). As such, there is a big difference between educators from earlier generations and current students based on their experiences, expectations, and technological expertise. Such setting has put more pressure on educators

because of students' request to adopt, use and capitalize on emerging technology affordances and online resources (Kennedy et al., 2009; Miller, 2014). Thus, a number of studies have suggested that academics must be aware of these differences and adjust their teaching based on students' diverse needs and expectations to enhance students' learning (Kennedy et al., 2009; Oblinger & Oblinger, 2005b; Worley, 2011).

3.3 Chapter Summary

This chapter reviewed the relevant literature concerning the emergence of Web 2.0 technologies, different modes of delivery, and the rise of different generations in higher education. Recent research studies on multiple intelligences and online videos were also explained in this chapter. The next chapter will explain the research methodology the participants, instrumentation, and techniques employed for the data collection and data analysis for conducting this study.

CHAPTER 4

METHODOLOGY

4.1 Introduction

The literature discussed in *Chapters Two* and *Three* is important in guiding the research questions and discussing the findings of the study. In fact, the researcher attempted to briefly explain the most relevant learning theories in *Chapter Two* in order to describe the learning developmental stages that individuals undergo. Likewise, a description of the employed theories for the study as well as a brief but comprehensive comparison and explanation of these viewpoints were provided to justify why the researcher has employed these theories. Consequently, the way that they were used in the study were presented. In a similar vein, *Chapter Three* provided a critical review of the literature pertinent to the research questions of the study, including the emergence of Web 2.0 and social networking tools for instance, and their implications for university lecturers and educators. This chapter explains the research methodology employed in the study including the methods used to collect data, how they are adopted, and for what purposes. Furthermore, the reliability and validity of the methods, instruments and techniques utilized for the data collection and data analysis are also given.

4.1.1 Research Design

The research design of this study incorporates both quantitative and qualitative approaches by way of a mixed design. This method gives an accurate and in-depth understanding of students' experiences with online videos across different modes, with respect to their relationship with multiple intelligences. A mixed-methods approach as defined by Creswell (2012) is "a procedure for collecting, analysing, and mixing both quantitative and qualitative data in a single study or in a multiphase series of studies" (p. 22). The core assumption for utilizing this approach is that using both quantitative and qualitative methods provides "a better

understanding of the research problem and question than either method by itself" (Creswell, 2012, p. 535). Furthermore, the researcher needs to understand both strands of research (quantitative & qualitative). Also, a mixed-methods approach is not simply collecting two distinct types of research. Instead, the researcher engages in a process of "merging, integrating, linking, or embedding the two strands" of data (Creswell, 2012, p. 535). Initially, the study used a quantitative method and then, a qualitative method i.e. in depth, semi-structured interviews with students and lecturers (see Figure 3-1). This provided greater and richer descriptions of students' perceptions and experiences and further investigated their perspectives about learning through online videos, across different modes.

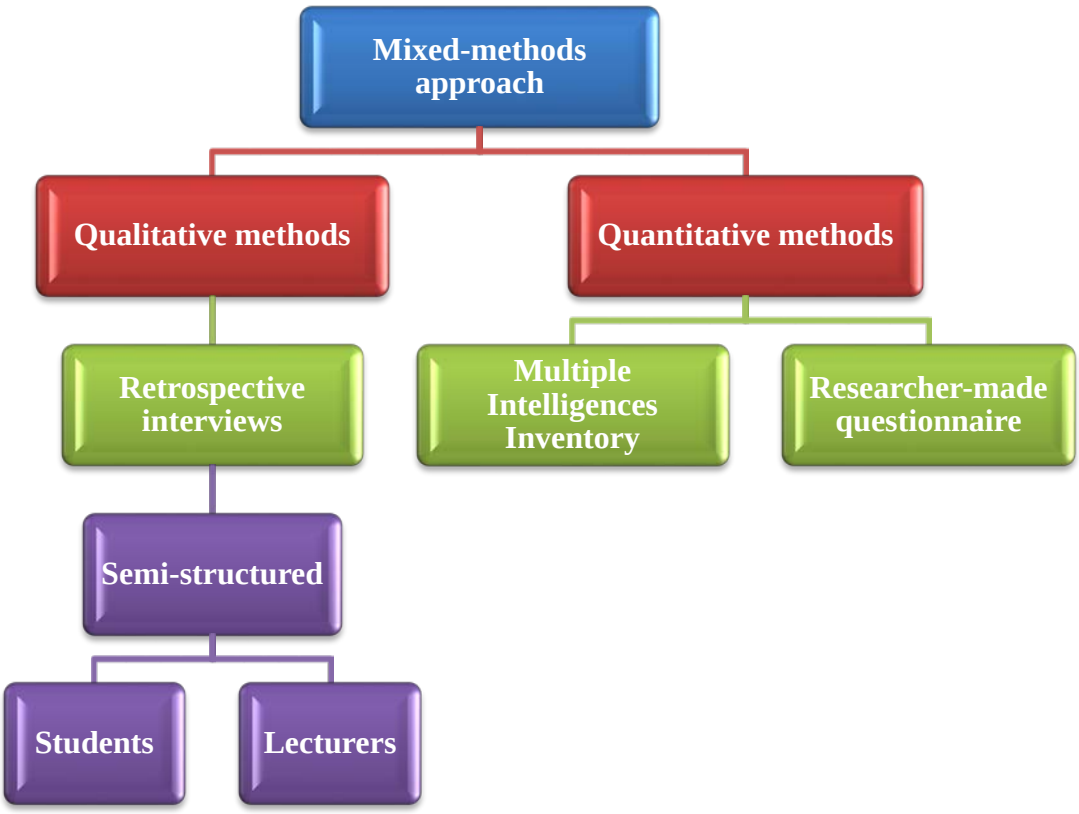


Figure 4-1: Research Plan of the Study

4.1.2 Research Site

A university located in the tropics was the research site of the study. This university campus is located in Australia and is one of the three main campuses of the university. It is a public

university and the second oldest university in the state. The research site of the study was selected purposively for a number of reasons. These reasons are guided by Berg and Lune (2012) asserting that the study site should be a location where:

> **1.** Entry or access is possible.
> **2.** The appropriate people (target population) are likely to be available.
> **3.** There is a high probability that the study's focuses and processes, people, programs, interactions, and structures that are part of the research question(s) will be available to the investigator.
> **4.** The research can be conducted effectively by an individual or individuals during the data-collection phase of the study. (pp. 47-48)

Since the researcher was a PhD student at the university, it was convenient for him to gain permission from authorities at the university. Moreover, the university has offered online and blended video-assisted subjects over 10 years and therefore this can best serve the needs of the present research.

4.1.3 Participants

The participants for this study were male and female tertiary students studying at the university site (see Figure 4-2). They were taking undergraduate subjects in Educational Sciences including ES3001 (Curriculum), ES1001 (Technology in the Classroom), ES3002 (Science Education) and ES4007 (Advanced Education) and subjects in Behavioural Sciences BS1481 (Introductory Psychology), BS1482 (Universal Psychology), BS2483 (Introductory Statistics), and BS3487 (Psychological Testing). Subject names have been changed to ensure anonymity. Two of these subjects (ES3001 and ES1001) were taught in four different modes- 'face-to-face Internal', on the two Australian sites, 'online', and an 'Indigenous' education program. Two of the modes for these subjects were face-to-face, one was blended and the other one was totally online. The rest of the subjects (ES3002, ES4007, BS1481, BS1482, BS2483, and BS3487) were taught face-to-face Internal' on two Australian sites. In this study, the researcher tried to

include subjects reflective of the modes of delivery being offered on the campus, thus ensuring the participants have had experience with these different modes of delivery.

Likewise, for the qualitative part of the project, the researcher selected some students (initially 8) according to the purposeful sampling technique. This is the most common sampling technique to provide additional information of students' experience and to gather information in their own words to complement and supplement the findings from the questionnaires. In practice, the number of required participants for the qualitative interview will become clear as the research continues. In other words, the researcher continues expanding the sample size until data collection supplies no emerging new categories, themes or explanations (data saturation). Data saturation is "the point at which no new information is forthcoming from additional participants or settings" (Ary, Jacobs, Sorensen, & Walker, 2014, p. 675). Furthermore, the researcher invited lecturers teaching in both colleges to participate in an interview. The interviews provide further insights into the perceptions of teachers about different modes and purposes for online videos.

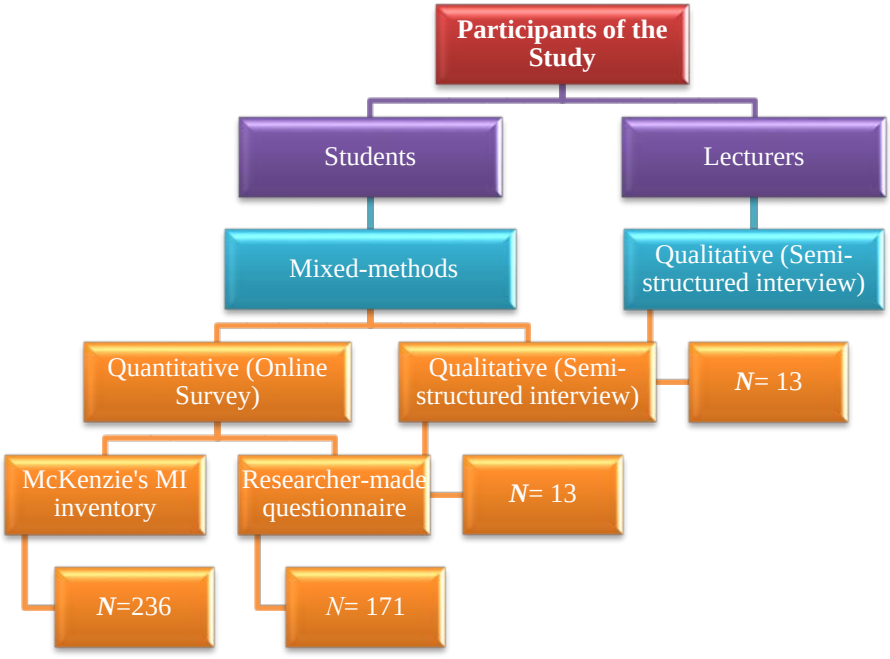


Figure 4-2: Consort Diagram of the Study

4.2 The Researcher's Role

As I was enrolled in a PhD program at the university, academic staff were familiar with me, as my supervisory team belonged to both colleges. This familiarity had both positive and negative aspects. As a student, the lecturers were aware of my study and were willing to participate in the research. I could easily talk to them about my data collection and was able to enlist their assistance in allowing me to speak to the students, and facilitating the distribution of the URL links to the online surveys. This was instrumental in gaining volunteer participation for the study. Alternatively, their assistance may have had the tendency to provide the information I was looking for. Furthermore, being involved in "a sustained and intensive experience with participants" (Creswell, 2014, p. 187) can also lead the researcher to have biases that may affect his or her analyses. To avoid this shortcoming, Isakson and Boody (1993) maintain that researchers should explicitly express their rationale in making decisions about different procedures of the study and be clear about his or her interests, values and beliefs. Accordingly, many researchers (Ary et al., 2014; Creswell, 2014; Patton, 2015) believe that relying on multiple data sources and research methods and analyses can reduce or at least detect any biases. Being aware of these pros and cons, my roles in the study became those of researcher and data collector. It should also be noted that the researcher had no role in teaching, tutorials or marking in any of these subjects.

4.2.1 Sources of Quantitative Data

The instruments utilized for the quantitative measures are: 1) the McKenzie's Multiple Intelligences Inventory; and 2) a researcher-made questionnaire.

4.2.1.1 Multiple Intelligences Inventory

To identify the intelligence profile of the participants, McKenzie's Multiple Intelligences (MI) Inventory was used. Participants were able to access the inventory online (see Appendix A). Armstrong (2009) states that the MI inventory is a form designed to assess the strengths of the individual as determined by each of the intelligences. Some researchers have reported the overall internal consistency of the inventory being in the range from 0.85 to 0.90 (Al-Balhan, 2006; Hajhashemi & Wong, 2010; Razmjoo, 2008; Razmjoo, Sahragard, & Sadri, 2009). The scale consists of 90 statements related to each of the nine intelligences proposed by Gardner (1999a, 1999b). An example of a scale item is, 'I can complete calculations quickly in my head'. Each student is required to complete the likert-type inventory by placing a number from 1 to 5 (corresponding to 'completely disagree' to 'completely agree') next to each statement they feel accurately describes them. The number of studies utilizing the likert scale technique over the past 83 years (the original likert article was released in 1932) have shown that "the method is simple, versatile, and reliable" (Dörnyei & Taguchi, 2009, p. 27) . In the first part of the inventory, the researcher attempted to elicit the participants' demographic information in relation to their gender, age, student status (part time or full time), and academic level.

4.2.1.1.1 Validity and Reliability of the MI inventory

In consideration of reliability and validity of the MI inventory, the researcher selected the instrument that had been proven to be "stable and consistent" and had a track record of use over "multiple times at different times" (Creswell, 2012, p. 159). A number of studies that have used the instrument are listed in Table 3-1. The inventory has performed well in diverse samples and countries. Although the overall internal consistency of the inventory is reported to be in a range between 0.75 and 0.95, the content validity of the inventory was verified by two Australian-born academics with PhDs. They both were registered teachers and academics

with more than 15 years of teaching experience. As the inventory was made for the American context, they were asked to review and modify some of the wording and phrases to simplify it and make it more comprehensible for the Australian context and adaptive to the cultural environment of the study. After that, the MI Inventory was sent to three members of the supervisory team who are experts in related fields and have considerable knowledge in multiple intelligence, academic performance and questionnaire design. Subsequent meetings with these experts revealed the need for more revisions to ensure that the instrument obtained the appropriate responses. As a result, the ordering of the MI inventory statements was changed to increase the validity of the students' responses. The validity and reliability procedure of the MI inventory is depicted below.

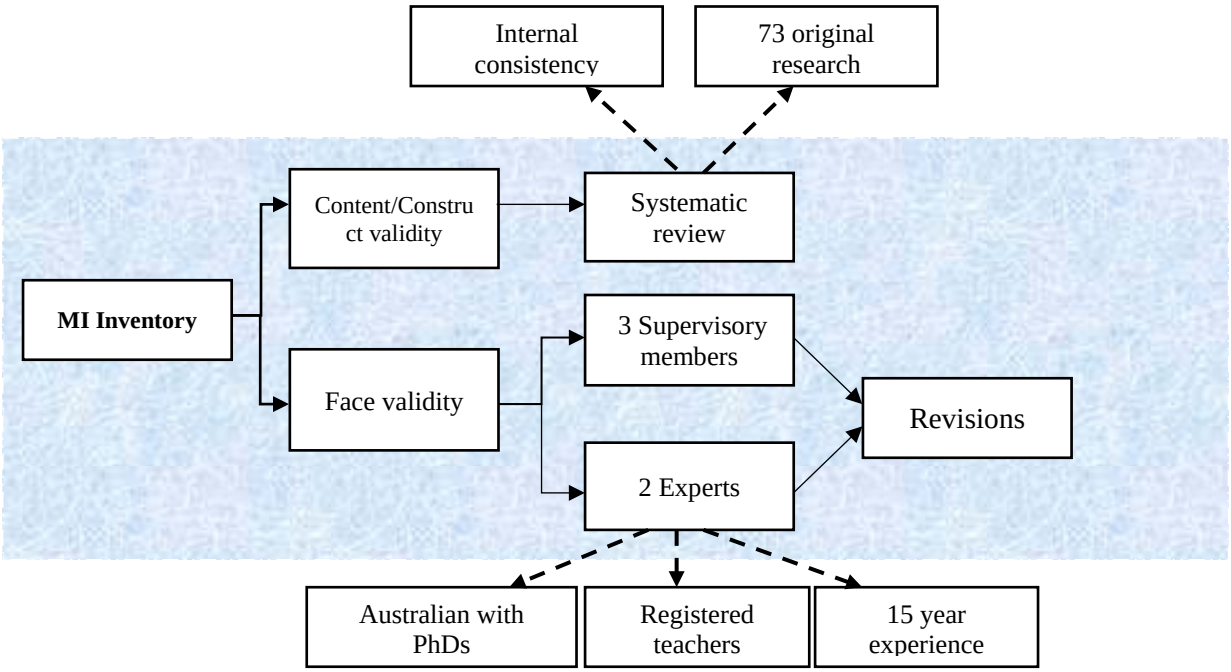


Figure 4-3: Validity and Reliability procedure of the MI inventory

A "Random Sequence Generator" (https://www.random.org/sequences/? min=1&max=90&col=3&format=html&rnd=new) was used to determine the order of the items. Some words and phrases were modified to make the inventory better adapted to the cultural environment of the study. After a number of revisions with the experts, a final version of the MI Inventory was considered to contain face validity and approval of the final version was given.

Table 4-1: A list of Studies utilizing McKenzie's MI inventory

Author(s) & Year	Title	Location	Type of Study & Statistical analysis	Design	Participants	Instruments	Cronbach alpha	Findings	Version
Azid and Yaacob (2016)	Enriching orphans' potentials through interpersonal and intrapersonal intelligence enrichment activities	Malaysia	**Mixed methods approach** (T-tests, thematic analysis)	one-group pretest-posttest design	46 (10 male and 36 female) junior high school students aged 13-15	**1.** Bahasa Malaysia version of McKenzie's MI inventory (only Interpersonal and Intrapersonal intelligences) **2.** Interview	**Reliability:** interpersonal intelligence: .65 intrapersonal intelligence: .70		Bahasa Malaysia version of McKenzie's MI inventory In addition to the reliability for these two intelligences (Intrapersonal and Interpersonal), Internal Validity of the translated version has undergone face and content validity by six experts in language, psychology and education.
Hashemian, Mirzaei, and Mostaghasi (2016)	Exploring different oral corrective feedback preferences: Role of intrapersonal and interpersonal intelligences	Isfahan, Iran	**Quantitative** (Correlations, regression)		60 (male and female), learners of an English institute, aged 18-29	**1.** McKenzie's MI inventory **2.** a CF researcher-made questionnaire	0.88	**a)** strong positive relationship between interpersonal and intrapersonal intelligences of participants and their preferred corrective feedback **b)** strong positive relationship between their intrapersonal intelligence and explicit types of corrective feedback **c)** tendency of interpersonal students towards repetition, paralinguistic signs, clarification requests, and translation	

								d) tendency of intrapersonal students towards conversational and didactic recasts, elicitation, explicit and metalinguistic corrective feedback	
Estrella (2016)	Multiple Intelligence and Work Performance of College Teachers				21 (7 male and 14 female) members of the Faculty of Instruction of the College of Education of the Bulacan State University Bustos Campus			**a)** Intrapersonal intelligence was the highest and visual-spatial intelligence was the lowest intelligence used by the respondents **b)** Revealing an outstanding job performance by the majority of respondents. **c)** No significant relationship between intrapersonal intelligence and job performance	
Seyabi and A'Zaabi (2016)	Multiple Intelligences in the Omani EFL context: How well aligned are textbooks to students' intelligence profiles?	Oman						**a)** the existence of misalignment between students' intelligence profiles with the textbooks' dominant intelligences **b)** female students in grade 12 were higher in intrapersonal intelligence followed by Bodily-kinesthetic, and visual-spatial intelligences **c)** the textbooks were found to be heavily based on verbal-linguistic intelligence followed by interpersonal and logical-mathematical intelligences.	
Sadripour and Motallebzadeh (2016)	On the relationship between Iranian	several universities in Iran (Tehran,	**Quantitative** (Descriptive Statistics,	Correlational/ex post facto design	360 (172 males, 188 females) undergraduate	**1.** Persian version of McKenzie's (1999) MI Inventory	.70 (for musical and visual intelligences)	**a)** Significant relationship between learners' musical and visual intelligences	**Persian version** of McKenzie's MI Inventory

	EFL learner's musical and visual intelligences and their use of speaking strategies in communication	Mashhad, Esfahan Birjand, and Gorgan), Iran	Correlation, Independent Samples T-test)		students majoring in English, aged 18 to 25	validated by Hajhashemi and Wong (2010) (only musical and visual intelligences were used) **2.** Oral Communication Strategy Inventory (OCSI) developed by Nakatani (2006)		and their use of speaking strategies. **b)** Significant relationship between musical intelligence and accuracy-oriented and fluency-oriented strategies, and visual intelligence and social affective and negotiation for meaning strategies. **c)** Superiority of Females in using some strategy types including message reduction and nonverbal strategies.	(1999) validated by Hajhashemi and Wong (2010) (only musical and visual intelligences [20 items] were used)
Zare-ee, Don, Knowles, and Tohidian (2015)	Gender differences in self-estimates of multiple intelligences among learners of English	University of Kashan, Kashan, Iran	**Quantitative** (Descriptive Statistics, Correlation, Independent Samples T-test)		300 (140 male &160 female) undergraduate students aged 19 to 24	McKenzie's (1999) MI Inventory	.89	**a)** Female learners tended to rate themselves higher on most intelligences and their means were significantly higher than those of male learners in the areas of naturalistic and existential intelligences.	not mentioned just saying: (Mckenzie's (1999) MI Inventory was downloaded and used for the calculation of each learner's scores on each of the intelligences)
Hashemian, Jafarpour, and Adibpour (2015)	Exploring relationships between field (in) dependence, multiple intelligences, and L2 reading performance among Iranian L2 learners	Tehran University and Shahrekord University, Iran	**Quantitative** (Descriptive Statistics, Correlation)		64 (12 males and 52 females) university students (35 seniors, and 29 postgraduates) majoring in English, aged 22 to 35	**1.** Oxford Placement Test **2.** Group Embedded Figures Test (GEFT) **3.** McKenzie's (1999) MI Inventory	.81	**a)** Significant positive relationship between field independence and performance on the 4 reading tasks of true-false, sentence completion, outlining, and scanning **b)** Significant positive relationship between Intrapersonal intelligence and scanning performance	**English version** (any ambiguity on the items were elaborated by the researcher)
Sadripour and Motallebzadeh (2015)	Iranian EFL learners'logical intelligence and their use of speaking strategies in communication:	Several universities in Iran (Tehran, Mashhad, Esfahan, Birjand, and Gorgan), Iran	**Mixed methods approach** (Reliability, Descriptive Statistics, Correlation, Semi-		360 (172 males, 188 females) undergraduate students majoring in English aged 18 to 25	**1.** Persian version of McKenzie's MI Inventory validated by Hajhashemi and Wong (2010) **2.** Oral Communication	0.73 (for logical intelligence)	**a)** Significant relationship between logical intelligence and accuracy-oriented and attempt to think in English strategies **b)** Message reduction strategies are the most frequently mentioned	**Persian version** of McKenzie's MI Inventory validated by Hajhashemi and Wong (2010)

	A correlational study		Structured Interview)			Strategy Inventory (OCSI) **3.** Semi-Structured Interview		strategies among both male and female learners	
Abolfazli Khonbi and Mohammadi (2015)	The relationship between Iranian university EFL students' multiple intelligences and their use of language learning strategies: An exploratory study	Urmia University, Urmia, Iran	**Quantitative** (Descriptive Statistics, Correlation)		41 male and female undergraduate EFL students, aged 20 to 23	**1.** Oxford's (1990) Strategy Inventory for Language Learning (SILL) **2.** McKenzie's (1999) MI Inventory	.91		not mentioned
Shahzada, Khan, Ghazi, and Hayat (2015)	Gender differences in self-estimated multiple intelligences among secondary school students	Khyber Pakhtunkhwa, Pakistan	**Quantitative** (Mean, standard deviation, and Independent sample t-test)		905 (542 boys and 363 girls) secondary school students, aged 14-16	1. a 45- items questionnaire derived from Armstrong MI Inventory (1994) and McKenzie's (1999) MI inventory (After incorporating the suggestions and feedback from content and methodological reviewers, the 40 items from Armstrong's (1994) Inventory and 5 items from McKenzie (1999) Scale were finalized. Following the criteria of Newby (1999) as adopted by Armstrong (1994), 5-point Likert rating scale that is Never (1) to Always (5) was used.)	The Cronbach's alpha value of intelligences ranged from .72 to .91, while this value for the whole scale was .95.	**a)** Female students estimated their verbal/linguistic, interpersonal, and intrapersonal intelligences higher than their male counterparts; **b)** Male students rated their bodily/ kinesthetic and naturalistic intelligences higher than their female counterparts **c)** No significant differences were found between male and female students on logical/ mathematical, visual/ spatial, musical and existential intelligences.	**Urdu** (translation and back translation method by experts was used)
Zarei and Feizi (2015)	Are Multiple Intelligences Subject to Persuasion?	Islamic Azad University, Takestan Branch, Imam Khomeini International University in Qazvin, Islamic Azad	A repeated measures one-way ANOVA, descriptive statistics, Multivariate tests for the RMANOVA, PAIRWISE		150 BA and MA EFL students in TEFL and English translation, aged 20 to 34	**1.** McKenzie's MI inventory **2.** Persuasive talks (oral persuasion on the four types of intelligences)		Persuasion had a statistically significant effect on musical, logical-mathematical, interpersonal, and verbal-linguistic intelligences.	Not mentioned

		University of Tehran, Central Branch and Islamic Azad University of Tehran, Science and Research Branch, Iran	Comparison for the RMANOVA,						
Hemmati and Sadeghi (2015)	The relationship between intelligence ability types and learners' foreign language achievement	Sirjan, Iran	Descriptive Statistics, Independent-Samples T-Tests	A descriptive, ex-post facto research design	112 female EFL learners of an English institute	**1.** The Persian version of McKenzie's (1999) MI Inventory **2.** Participants' final term scores as the measure of their language learning achievement		**a)** Statistically significant difference in the mean of verbal intelligence scores of the low and high achievers (higher achieving EFL learners have a higher verbal intelligence than their less proficient counterparts. **b)** Verbal and visual intelligences were the two mostly used types of intelligences by both high and low achieving groups.	**Persian version** of McKenzie's (1999) MI Inventory
Iyitoglu and Aydin (2015)	The relationship between multiple intelligence profiles and reading strategy use of successful English as a Foreign language (EFL) readers	Istanbul, Turkey	Independent Samples T-Tests, Kruskal Wallis-H tests and Mann Whitney as post-hocs, Pearson Product Moment Correlations, Spearman Correlation	explanatory sequential study, mixed method design	60 high school students with The mean age of 15.9 years old	**1.** The Survey of Reading Strategies (SORS) **2.** McKenzie's (1999) MI inventory (excluding the existential intelligence) **3.** The observation checklist developed by Armstrong (2003)	Translation, back translation, revision and a pilot test of the inventory were all employed, and the inventory was found to be within acceptable reliability values (α= 0.83; Intrapersonal = 0.66; Naturalistic = 0.64; Visual = 0.82; Musical = 0.65; Verbal = 0.70; Interpersonal = 0.74; Kinesthetic = 0.63; Logical = 0.62).	**a)** Females were more successful than males in EFL reading in addition to employing more support and problem solving reading strategies. **b)** Successful readers in EFL seemed to use more global strategies and tended to support reading strategies if they were dominant in musical, intrapersonal intelligences. **c)** Successful musically or verbally intelligent readers were found to use more problem-solving strategies.	**Turkish** (Translation, back translation, revision and a pilot test of the inventory)

Çelik (2015)	Managing the Classes by using Multiple Intelligence Instruction	Duhok, Iraq	**Mixed methods approach** (Descriptive statistics, interview, observation)	**Mixed methods approach**	75 college students (45 male, 30 female) aged 15-16 + 4 EFL teachers (interview)	**1.** A teacher interview **2.** McKenzie's (1999) MI inventory	0.75	**a)** Teachers who use different types of teaching activities can control their classes easier than the ways they used when they applied traditional teaching approaches. If teachers take into consideration students' Multiple Intelligences, they can achieve higher student engagement in the class activities. **b)** Teachers who use the same teaching techniques all the time have difficulties in managing the classes or their lessons are so boring. **c)** Using different types of activities which are related to learners' intelligence can both foster a positive climate and help the teachers to control their classes.	Checking the validity of the survey results, students' behaviors were observed by their teachers
Ahour and Abdi (2015)	The Relationship between EFL Learners' Multiple Intelligences and Vocabulary Learning Strategies Use with a Focus on Gender	Tabriz, Iran	Descriptive statistics, Pearson correlation coefficient, Multiple Regression, ANOVA		150 (75 male, 75 female) English learners of Novin English Language Institute, aged 18 to 25	**1.** Oxford Placement Test (OPT)(version 2, 2001) **2.** McKenzie's (1999) MI Inventory **3.**Vocabulary learning strategies (VLS) Questionnaire		**a)** There was a significant relationship between participants' MI types and VLS categories, and the musical type of intelligence had the strongest relationship with SOC category of VLS. **b)** Both male and female learners employed MEM and SOC categories of VLS as the most and the least frequently used strategies respectively. **c)** The interpersonal and linguistic types of MI were the best predictors of male learners' VLS use. For the female learners, however, the bodily and naturalist	Not mentioned just saying (Since the inventory included some difficult vocabulary items and grammatical structures, these items were simplified for the learners to comprehend them easily.)

								intelligences contributed significantly to the prediction of their VLS use.	
Panahandeh, Khoshkhoonejad, Mansourzadeh, and Heidari (2015)	On the relationship between Iranian EFL learners' multiple intelligences and their learning styles	the universities of Sistan and Baluchestan, Iranshahr, and Yasuj, Iran	Descriptive statistics, Pearson product moment correlations , independent-sample t-test		120 (60 male, 60 female) undergraduate students aged 19 -24	**1.** the Persian version of McKenzie's (1999) MI Inventory **2.** the adapted and modified version of Learning Style Questionnaire developed by Willing (1988)	0.84	**a)** A significant positive relationship between the different types of MI and learning styles in particular and the MI and learning styles as general factors. **b)** Communicative type of learning styles was the most dominant type and Authority-oriented learning style as the least dominant learning style type. **c)** A significant difference between male and female students in using communicative type of learning styles (female students use this type of learning style more than male ones). **d)** No significant difference between genders in employing learning styles as a general factor	**Persian version** of McKenzie's (1999) MI Inventory validated by Razmjoo (2008)
Samsudin, Haniza, Abdul-Talib, and Ibrahim (2015)	The Relationship between Multiple Intelligences with Preferred Science Teaching and Science Process Skills	Penang, Malaysia	**Quantitative survey** (Pearson correlation, Regression)		300 primary school students from five (5) primary schools	**1.** McKenzie's (1999) MI inventory **2.** Preferred Science Teaching Questionnaire (Enger & Yager, 1998) **3.** Science Process Skills Questionnaire (Enger & Yager, 1998)	0.98	**a)** A relationship between kinesthetic, logical-mathematical, visual-spatial and naturalistic intelligences with the preferred science teaching **b)** There was a correlation between kinesthetic and visual-spatial intelligences with science process skills, implying that multiple intelligences are related to science learning.	Not mentioned
Jafari Gohar and Sadeghi (2015)	Gardner's Multiple Intelligence	Sirjan, Iran	Descriptive Statistics, Independent-	descriptive, ex post facto design	106 female EFL learners of a	**1.** The Persian version of		**a)** A statistically significant difference in the mean of verbal	**Persian version** of McKenzie's

	Theory and Foreign Language Achievement		Samples T-Tests		private language institute	McKenzie's (1999) MI Inventory **2.** The learners' final term grades as the measure of their language learning achievement		intelligence scores of the low and high achieving groups, which was larger among the high achievers (more proficient EFL learners have a higher verbal intelligence, than their less proficient counterparts) **b)** Verbal and visual intelligences were the two mostly used types of intelligences by both high and low achieving groups.	(1999) MI Inventory
Meneviş and Özad (2014)	Do age and gender influence multiple intelligences?	Famagusta and Iskele Districts, Northern Cyprus	independent samples t test, analysis of variance (ANOVA)		517 (233 male , 284 female) high school students in grades 10, 11 and 12 at 4 high schools, aged15 to 18	McKenzie's (1999) MI Inventory	content validity and experts' opinions	**a)** Statistically significant differences for verbal, kinesthetic, existential, musical, interpersonal, intrapersonal, and naturalist intelligences according to gender **b)** Statistically significant differences for visual, logical, intrapersonal, naturalist, and existential intelligences according to age	**Turkish**
Azid and Mokhtar (2014)	The effectiveness of the modular enrichment activities based on Gardner multiple intelligences and Sternberg thinking skills	Malaysia	Levene test, a homogeneity test, ANCOVA, Kruskal-Wallis H test,	quasi-experimental design which included the pre-test and post-test	57 Form Four students in MARA Junior Science Colleges (MRSM) where 29 and 30 students represented the controlled and treatment groups	**1.** the Sternberg Triarchic Ability Test (STAT) **2.** the Malay translated version of McKenzie's (1999) MI inventory	.80	The findings suggested that the integration of Gardner's multiple intelligence and Sternberg's thinking skills through the modular enrichment activities stimulated the multiple intelligence profiles and the levels of the thinking skills of the treatment group significantly.	**Malay** (The multiple-intelligence test was adapted from McKenzie and translated into Malay. The translated version had been used in previous studies (Nurulwahida, 2005; Zaidatun, 2002))
Badie and Farajollahi (2014)	The Impact of E-Content Based on Gardner's Intrapersonal and Interpersonal Intelligences on Students Learning	Isfahan, Iran		Pre-posttest with control group	60 third grade computer female students of vocational schools	1. McKenzie's (1999) MI Inventory **2.** two researcher-made questionnaires	0.74	Multivariate covariance analysis revealed that learning achievements in the group trained with the e-content based on intrapersonal intelligence was	**Persian version** (translated and checked with Psychology experts from Payam Nour university)

								significantly higher than the control group, but in method based on interpersonal intelligence, there was no significant difference between the learning achievements of the two groups.	
Shahzada, Khan, Noor, and Rahman (2014)	Self-Estimated Multiple Intelligences of Urban & Rural Students	Khyber Pakhtunkhwa, Pakistan	mean scores, descriptive and Independent sample t- test,		905 secondary school students in seven southern districts	**1.** Armstrong's MI inventory **2.** McKenzie's (1999) MI inventory (only Existential intelligence)	.96 For validity of the instrument initially 72 statements were identified by the researcher, compiled them in a logical sequence, and were distributed among 20 experts and 30 secondary school students for content validation. These experts included working experienced university psychology teachers, teachers of Institute of Education and Research and language teachers.	**a)** A significant difference between self-estimated verbal-linguistic, logical-mathematical, bodily-kinesthetic, naturalistic, existential, and overall intelligence of urban and rural students	**Urdu** (The inventory was slightly modified and translated into Urdu with the experts to make it easier and understandable to the students in local context.)
Boudraf (2014)	An Investigation Study on the Relationship between English Language Students'	university of Mohamed Boudiaf in M'sila, Algeria	Descriptive Statistics, Pearson Product-Moment Correlation, Stepwise	experimental approach	52 third year university students, aged 20 to 40	**1.** McKenzie's (1999) MI Inventory **2.** TOEFL reading comprehension practice test (IBT)		**a)** A significant relationship between the MI profiles and the reading ability. **b)** Naturalistic intelligence and the interpersonal intelligence	Not mentioned (However, it has been used for English majoring students)

	Multiple Inteligences and Comprehension		Multiple Regression					as the predictors of the reading ability scores.	
Jokar and Hesabi (2014)	The Relationship between Multiple Intelligence Types and L2 Reading Skill among Iranian High School Students	Azna in Lorestan Province, Iran	Pearson's Correlation, ANOVA, Multiple Regression, Paired-Samples T-Test	a descriptive, survey-based, correlational research	64 third grade male students , aged 16 to 18	**1.** Interchange Objective Placement Test (2005) **2.** McKenzie's (1999) MI Inventory (1999) **3.** A reading comprehension text that corresponds with the students' dominant MI profile	more than 0.80 for each section	**a)** Among different types of multiple intelligences just linguistic-verbal, logical-mathematical, spatial, and interpersonal intelligences have statistically positive relations with the level of their reading skill. In other words, it could be concluded that Linguistic-verbal and naturalist intelligences could predict the reading skill scores of Iranian high school students which yielded multiple regression coefficient (beta) of 0.990 and 0.121, respectively. **b)** There was a significant difference between participants' IOPT scores and their scores on the comprehension of a text which corresponds with their dominant intelligence (p-value<0.01).	**Persian version** of McKenzie's MI Inventory (1999) validated by Hajhashemi and Wong (2010)
Lawrence (2014)	Multiple Intelligence of Prospective Teachers	Tamil Nadu, India	percentile analysis, 't' test and ANOVA		400 male and female teachers studying Diploma in Teacher Education in teacher training institutes In three different age groups: 18 to 22, 23 to 27, and 28 to 34	McKenzie's (1999) MI Inventory		**a)** male and female prospective teachers significantly differ in their verbal-linguistic intelligence **b)** first year and second year prospective teachers significantly differ in their musical-rhythmical intelligence **c)** rural and urban prospective teachers did not differ in their multiple intelligences **d)** Age group of 18 to 22, 23 to 27, and 28 to 34 years were significantly	**English**

								differing in their musical-rhythmical, intrapersonal and naturalistic intelligences.	
Rahbarnia, Hamedian, and Radmehr (2014)	A Study on the relationship between multiple Intelligences and mathematical problem solving based on Revised Bloom Taxonomy	Quchan, Iran	Pearson's correlation		209 K7 schoolgirls aged 13–14 years old	**1.** Persian version of McKenzie's (1999) MI Inventory. **2.** Mathematics questions based on Revised Bloom Taxonomy		Obtained results, indicate that several intelligences like logical/mathematical, spatial/visual, existential, intrapersonal and naturalist positively correlated to mathematical problem solving and others like linguistic- verbal, bodily-kinesthetic and interpersonal positively correlated to mathematical performance just in some aspects. For improving students' mathematical problem solving at least in undergraduate mathematics, paying attention to multiple intelligence (MI) theory in mathematics curriculum and book context could be very important because this study revealed that intelligences correlated to mathematical problem solving.	**Persian version** of McKenzie's MI Inventory (1999) validated by Hajhashemi and Wong (2010)
Asassfeh (2014)	Linguistic intelligence and logical intelligence: Which is determinant for logical connector (LC) comprehension by EFL readers?	a public university in Jordan	Mean and standard deviation, Pearson correlation		200 (36 male, 164 female) English-major undergraduate students	**1.** McKenzie's (1999) MI inventory **2.** Ozono and Ito's (2003) Logical Relations Reading Test	0.83 (2 domains of the MI Inventory)	**a)** Students had significantly higher logical-mathematical intelligence than linguistic intelligence. Nonetheless, linguistic intelligence had a stronger correlation with their reading comprehension performance in both their L1 and L2	**Arabic** (translation, back translation and checking the validity by three professors)
Emmiyati, Rasyid, Rahman,	Multiple Intelligences profiles of Junior	Junior high school,	a quantitative research	Descriptive statistics	302 (125 male, 177 female)	An MI Inventory adapted from		**a)** All intelligences were possessed by the students	**Indonesian** (The inventory was translated

Arsyad, and Dirawan (2014)	secondary school students in Indonesia	Makassar, Indonesia			junior secondary school students	Berman (1998), McKenzie (1999), and Armstrong (2009).		either in strong, moderate, or weak category. **b)** Existential intelligence became the strongest intelligence among the nine types of multiple intelligences. Moreover, other types of multiple intelligences in strong category were interpersonal intelligence and verbal-linguistic intelligence. **c)** male students significantly possessed stronger in logical-mathematic intelligence, bodily-kinesthetic intelligence, and intrapersonal intelligence, **d)** Female students were significantly stronger in musical intelligence, interpersonal intelligence, and existential intelligence. **e)** There was no significant difference between male students and female students in verbal linguistic intelligence, visual-spatial intelligence, and naturalist intelligence.	into Indonesian and consisted of 72 items which covered nine types of Multiple Intelligences.)
Bemani Naeini, Zohoorian, Baghban, and Pandian (2014)	Multiple learners' needs: The effect of multiple intelligences-based activities on listening proficiency	Mashhad Islamic Azad University, Mashhad, Iran	Paired sample t-test, descriptive statistics, ANOVA,		60 (10 male, 50 female) TEFL university students, aged 19 to 26	**1.** McKenzie's (1999) MI Inventory **2.** Two standard published tests of TOEFL listening proficiency test	0.76 The content validity was verified by a panel of Experts (3 academic members with an average of 15 years teaching and research experience)	**a)** better results are obtained once teaching methodology accommodates activities across intelligences rather than considering just the preferred intellectual strengths on the part of learners	Not mentioned. Just stating that the questionnaire was downloaded from the site.
Saidi and Khosravi (2013)	The relationship between EFL	Iran	Descriptive statistics,		110 male and female EFL	**1.** McKenzie's (1999) MI Inventory		**a)** There is low negative correlation between these	Not mentioned.

	learners multiple intelligences and foreign language classroom anxiety		Pearson product-moment correlation, independent t-test, Paired-samples t-test		university students in English Translation Studies, aged 19 to 25 (55 freshmen and 55 senior)	(3 intelligences were used [30 items]) **2.** Foreign Language Classroom Anxiety Scale **3.** Quick Oxford Placement Test		intelligence types and foreign language classroom anxiety. **b)** Among the components of foreign language classroom anxiety, test anxiety and fear of negative evaluation were found to correlate with linguistic intelligence. **c)** No significant difference between freshman and senior university students regarding their foreign language classroom anxiety.	
Kutz, Dyer, and Campbell (2013)	Multiple intelligence profiles of athletic training students	USA		Descriptive statistics and frequency distributions, ANOVA with a Tukey Post Hoc, iiindependent samples t-test, paired samples t-tests	85 (36 male, 49 females) athletic training students from two different universities aged 19 to 32	McKenzie's (1999) MI Inventory		Main Outcome Measures: Descriptive statistics and frequencies were used to report distribution of multiple intelligences, independent t-tests and ANOVA (Tukey post hoc) were used to measure differences (p=.05) between ATS. Paired t-tests compared differences in intelligences ratings and coefficient alpha was used for internal consistency of the MII. Results: Internal consistency for the MII was acceptable (α=.85). Kinesthetic was rated highest, M=8.0±1.6 (scale 1-10) and was higher than the other intelligences t(84)=4.2 to 16.6 (p=.000); second was intrapersonal (M=6.89±2.2). Verbal intelligence was the lowest, M=3.85±1.8; and was lower than the other intelligences t(84)=-4.0 to -16.6 (p=.000). With one	

								exception, independent t-tests and ANOVA comparisons found no differences between ATS's in the demographic variables measured (i.e., semester in school, age, level in ATEP, gender, ethnicity). Only differences in existential intelligence were noted between semesters and year in school F(3,81)=3.26 (p=.03); F(2,82)=4.62 (p=.013).Conclusions: Kinesthetic intelligence (i.e., hands-on) was the most dominant among ATS and verbal intelligence (i.e., auditory) was the lowest. The presence of certain intelligence may be attributed to factors other than gender, ethnicity, or semester in school.	
Naseri and Nejad Ansari (2013)	The relationship between multiple intelligences and Iranian high school students' L2 writing achievement	Shahed high schools of Doroud in Lorestan Province, Iran	descriptive statistics, Pearson product-moment correlation, Partial Correlation, Multiple Regression,		80 male and female high school students aged 16 to 18	**1.** McKenzie's (1999) MI Inventory **2.** Essay Writing Task **3.** Roebuck's Analytic Scoring Rubric	Linguistic-verbal 0.84 Musical 0.89 Logical-mathematical 0.85 Spatial 0.87 Bodily-kinesthetic 0.80 Intrapersonal 0.82 Interpersonal 0.88 Naturalist 0.86	**a)** Among different types of multiple intelligences just linguistic intelligence had statistically significant positive correlations with Iranian high school students' L2 writing achievements. **b)** Linguistic intelligence could act as the best predictor of Learners' L2 writing achievements.	Persian version (translation, back-translation by experts)
Rouhi and Mohebbi (2013)	Glosses, spatial intelligence, and L2 vocabulary	pre-university centers in Ardabil,	Descriptive statistics, ANOVA,		62 male pre-university	**1.** Reading Materials And Targeted Words	.89 (only for spatial intelligence)	**a)** The positive effect of multimedia glosses on L2 vocabulary learning.	Not mentioned.

	learning in multimedia context	Iran	post-hoc (Tukey HSD) test,		students, aged 18 to 20	**2.** Multimedia Glosses Software (Scaffoglossing) **3.** McKenzie's (1999) MI Inventory		**b)** No significant difference among the participating experimental groups. **C)** No significant difference between the high and low spatial ability groups	
Yoon (2013)	Analysis of multiple intelligence preferences of EFL learners compared to actual classroom activities	Korea	correlation, a paired-sample t-test, GLM-repeated-measure ANOVA		95 elementary school students	**1.** An adapted and modified version of McKenzie's (1999) MI Inventory taken from the site (a total of 64 items for 8 intelligences)		**a)** the most dominant intelligence areas were the interpersonal and the musical intelligences, while the most frequently provided activities in class involved the verbal-linguistic and the logical-mathematical intelligences.	
Zarei and Azin (2013)	Multiple intelligences as predictors of resource management and motivational self-regulated learning	Imam Khomeini International University and Islamic Azad University in Qazvin, Iran	stepwise multiple regression, ANOVA		150 male and female intermediate college students in TEFL aged 20 to 35	**1.** McKenzie's (1999) MI Inventory **2.** "Motivated Strategies for Learning Questionnaire-MSLQ" developed by Pintrich et al. (1993)		**a)** Significant relationships between multiple intelligences and resource management self-regulated learning. **b)** The relationship between multiple intelligences and the motivated self-regulated learning was not statistically significant.	Not mentioned
Hajhashemi, Shakarami, Anderson, Yazdi-Amirkhiz, and Zou (2013)	Relations between Language Learning Strategies, Language Proficiency and Multiple Intelligences	Malaysia	Frequency and Percentage, Descriptive Statistics, Pearson Product-Moment Correlation		132 (26 male, 106 female) Malaysian university students, aged19 to 23	**1.** McKenzie's (1999) MI inventory **2.** SILL (Strategy Inventory for Language Learning)	0.89	**a)** students mostly use meta-cognitive strategies followed by social strategies **b)** There was a low, positive correlation between MI and four types of strategies (the highest correlation can be seen between meta-cognitive strategies and MI, followed by compensation and cognitive strategies). **c)** Among the intelligences, verbal-linguistic intelligence showed significant correlation with all strategies except	**English**

								compensation strategies. Naturalist and logical-mathematical intelligences did not show significant correlation with any strategy type. **d)** no significant relationship was found Between language learning strategies and the learners' overall MUET scores	
Ghamrawi (2013)	Leadership styles of school principals and their multiple intelligences profiles: Any relationship?	Lebanon	Descriptive statistics, Mean scores, standard deviations and percentage, Pearson correlation coefficients, Linear Multiple Regression		307 male and female public school principals in from different age groups: Less than 25 26-35 36-45 46 and above	**1.** Avolio and Bass (1992) Multifactor Leadership Questionnaire (MLQ – 5X) **2.** an adapted version of McKenzie's (1999) MI Inventory	The reliability of McKenzie's (1999) adapted version was assessed through a pilot study from a sample of 39 teachers conducted by the same author, yet in another study within the same context in three schools. Results indicated that all subscales do have internal consistency with Cronbach's alphas of 0.80 (logical intelligence), 0.88 (interpersonal intelligence), and 0.89 (intrapersonal intelligence), 0.79 (visual intelligence), 0.81 (musical intelligence), 0.76 (kinesthetic intelligence), 0.80 (existential intelligence),	**a)** Strong positive correlations were detected between MI and existential, verbal and interpersonal intelligences. **b)** Linear Multiple Regression Analysis denoted that 47.5% of the total variance of transformational leadership was predicted by the interaction of the three MI (Existential, verbal, and Interpersonal), with existential intelligence being the strongest predictor of transformational leadership.	**Arabic**

							0.82 (verbal intelligence), and 0.81 (naturalist intelligence).		
Heidari and Panahandeh (2013)	The Relationship between Iranian EFL learners' Multiple Intelligence and listening strategies	universities of Sistan and Baluchestan, Iranshahr, and Yasuj, Iran	Descriptive Statistics, Pearson correlation, Independent-samples t-tests		120 (60 male and 60 female) Iranian EFL university students from two universities, aged 19 to 24	**1.** Persian version of McKenzie's (1999) MI Inventory **2.** a listening strategy questionnaire adapted from Vandergrift (1997) and Vandergrift, Goh, Mareschal, and Tafaghodatari (2006)	0.84	**a)** The most and the least dominant types of multiple intelligences among participants of this study were existential and naturalistic intelligences and those of listening strategies were cognitive and socio-affective strategies, respectively. **b)** There was some significant positive relationship between the overall MIs and listening strategies. **c)** There are significant differences between male and female students in bodily, interpersonal, and existential intelligence, but the analysis showed no significant difference between male and female students regarding their listening strategies.	**Persian version** of McKenzie's (1999) MI Inventory validated by Razmjoo (2008)
Ghasemi (2013)	Variables affecting the choice of social language learning strategy	IKI University, Iran	Pearson correlation coefficient, Independent-samples T-Test, One-way ANOVA	a descriptive and quantitative research design	124 (39 male and 85 female) EFL university students, aged 18 to 27	**1.** McKenzie's (1999) MI Inventory (only interpersonal intelligence) **2.** The Strategies Inventory of Language Learning (SILL)		**a)** Students with a higher rate of interpersonal intelligence are more apt to choose the SLLS compared to those with a lower rate of interpersonal intelligence. **b)** Gender and level of proficiency have no significant effect on students' frequency of choice of SLLS among Iranian EFL learners.	**Persian** (only 10 items related to interpersonal intelligence)
Çelik (2012b)	An Invetsigation on the Application of Multiple Intelligence-	Iraq			95 English preparatory school students aged 17-19	**1.** McKenzie's (1999) MI Inventory **2.** Armstrong's MI questionnaire	0.748	The results of experiment support the hypothesis about the positive impact of taking into consideration the	**Turkish, Arabic,** and **Kurdish** (based on students' native

	Based Teaching in the Process of Teaching Reading to EFL Students							students' dominant type of intelligence in the process of teaching reading.	language), a pilot test was run in advance.
Hashemian and Adibpour (2012)	Relationship between Iranian L2 learners' multiple intelligences and language learning strategies	Fars Province, Iran	Descriptive Statistics, Pearson product moment Correlation		Thirty EFL female learners of a language institute, aged 13-25	**1.** Oxford placement Test (OPT) **2.** McKenzie's (1999) MI Inventory **3.** Strategy Inventory for Language Learning (SILL)	.69	**a)** A strong positive relation between the participants' MI scores and their use of LLSs **b)** Strong positive correlations between verbal intelligence and memory and cognitive learning strategies, intrapersonal intelligence and memory learning strategies, and visual intelligence and cognitive learning strategies	To clear any ambiguity, one of the researchers read each item and elaborated on its meaning in English to make sure that the participants got the exact meaning of each item.
Rahimi, Sadighi, and Hosseiny Fard (2012)	The impact of linguistic and emotional intelligence on the reading performance of Iranian EFL learners	Iran	a two-way test of ANOVA		90 female senior English major students	**1.**Schutte Self-Report Emotional Intelligence Scale (SSRES) **2.** The MI questionnaire used by Sadri (2007). This questionnaire is a combination of Nail's (2002) MI tests of Ned production and McKenzie's (1999) MI Inventory. It is a 90-item MI questionnaire on a five-point Likert scale. The construct validity of this test was calculated through factor analysis by Sadri (2007). The factor analysis for LI indicates that 88% of information can be assessed by 10 factors. The reliability of this test		**a)** Students with a high level of linguistic intelligence showed a higher reading ability than those with a lower level of linguistic intelligence. **b)** The results, however, showed no significant difference among the students with different degrees of emotional intelligence. **c)** Linguistic intelligence is a relatively strong predictor of reading performance, accounting for more than 40% of the variance observed in the students' performance on the reading comprehension test.	The MI questionnaire used by Sadri (2007)

						was calculated using Cronbach's Alpha (P = 0.90) by Sadri (2007). The reliability of the questionnaire was calculated for the present study, again through Cronbach's Alpha, yielding an index of 0.55, which is an acceptable index here, due to the small number of items. **3.** In order to assess the students' knowledge of reading comprehension, the reading comprehension section of a TOEFL practice test, ETS (1995), was used.			
Çelik (2012a)	The influence of multiple intelligences on teaching reading in a foreign language	Arbil, Iraq		experimental study	59 freshman students (30 students in control group and 29 students in experimental group [10 male, 19 female]), aged 19 to 21	**1.** McKenzie's (1999) MI Inventory **2.** Armstrong's Multiple Intelligence questionnaires **3.** Different learning activities		The findings showed that directing the learners according to their intelligences bring many benefits not only in improving their reading skills, but also in reducing the class discipline problems and in developing awareness of their weaknesses and strengths.	Not mentioned.
Al-Salameh (2012)	Multiple intelligences of the high primary stage students	Jordan	Descriptive statistics, Pearson's correlation coefficients,		400 school students in high primary stage (the 7^{th}, 8^{th}, 9^{th}, 10^{th} grade) (200 male and 200 female)	An adopted version of MI including and using several MI inventories and McKenzie's MI.	0.95	**a)** The excellent students have high levels of all multiple intelligences fields, while normal students have average levels of all multiple intelligences fields. **b)** There were statistically significant differences among high primary stage	The researcher investigated the validity of the scale through Logical Validity, and Construct Validity. The researcher investigated the

								students in all multiple intelligences fields related to the variable of academic classification (excellent students, normal students) in favor for excellent students. **c)** There were no statistically significant differences in overwhelming majority of multiple intelligences fields among high primary stage students due to gender variable.	reliability of the scale by the following methods: (Test-Retest reliability, Split-Half Reliability. and Internal Consistency Reliability) of the scale items.
Hajhashemi and Wong (2012)	MI as a predictor of students' performance in reading competency	Iran	Descriptive Statistics, Pearson Product-Moment Correlation, Stepwise multiple regression	descriptive and ex post facto design	128 (54 male, 74 female) pre-university students (grade 12, aged 18-19)	**1.** A demographic questionnaire; **2.** The Persian version of McKenzie's (1999) MI Inventory **3.** A standardized reading proficiency test which was selected from retrieved paper-based TOEFL® tests		**a)** No significant relationship between the two variables of MI and reading scores of the students. **b)** A low significant, negative relationship between musical-rhythmic intelligence and reading which suggests that when the reading score of a student increases, musical-rhythmic intelligence of the same student decreases and vice versa. **c)** Three categories of MI (musical-rhythmic, verbal-linguistic, and bodily-kinesthetic) were found to be predictive of reading proficiency.	**Persian version** of McKenzie's MI Inventory (1999) validated by Hajhashemi and Wong (2010)
Foong et al. (2012)	Pattern and relationship between multiple intelligences, personality traits and critical thinking skills among high achievers in Malaysia	Malaysia	Descriptive Statistics, Pearson Product-Moment Correlation		1268 secondary school students from all over Malaysia	**1.** Myers-Briggs Type Indicator (MBTI), **2.** Watson-Glaser Critical Thinking Appraisal (WGCTA), **3.** McKenzie's (1999) MI Inventory		**a)** High achievers possess the following intelligences: Intrapersonal> Existential> Bodily/Kinesthetic> Logical/Mathematical > Visual/Spatial> Interpersonal > Verbal/Linguistic>	Not mentioned.

								Naturalist> Musical/Rhythmic. **b)** The personality traits of the high achievers are in the order EN>ES>IS>IN. Whilst their critical thinking skills are in the order of EA>DE>RA>IF>IT. **c)** Some significant correlations between multiple intelligences, personality traits and critical thinking skills of high achievers.	
Napiere (2012)	Multiple Intelligence-Based Learning Preferences of Students, Modes of Delivery and Assessment Tools used in Lourdes College	Cagayan de Oro City, Philippines	Descriptive statistics		232 freshmen in a school	Classroom observations, individual / group interviews and MI test	0.93	**a)** Students have dominant musical-rhythmic and spatial-visual intelligences; and they prefer to learn through linguistic and intrapersonal means. **b)** The dominant modes of delivery used were intrapersonal and logic-based modes; and the assessment tools used were primarily related to the interpersonal and logical-mathematical intelligences. **c)** Students who have strong intrapersonal intelligence tend to prefer to learn in linguistic ways. **d)** Each mode of delivery used in classes is significantly related to each assessment tool.	Content validity by three (3) experts in the field of research and education
Saidi (2012)	EFL learners' multiple intelligences and foreign language classroom anxiety: The possible interface	Iran	descriptive statistics, independent t-test, correlation		100 male and female EFL university students majoring in English Translation Studies and English	**1.** McKenzie's (1999) MI Inventory (relevant items to the intelligence types under the study) **2.** Foreign Language Classroom Anxiety Scale (FLCAS)		**a)** There is negative low correlation between the intelligence types in this study and foreign language classroom anxiety. **b)** Among the components of foreign language classroom	Not mentioned.

					Literature, (50 freshmen and 50 senior), aged 19 to 28			anxiety, test anxiety and fear of negative evaluation were found to correlate with linguistic intelligence. **c)** There is no significant difference between freshman and senior university students regarding their foreign language classroom anxiety.	
Sarani, Keshavarz, and Zamanpour (2012)	The relevance of multiple intelligence theory to narrative performance: A study of Iranian undergraduates of English	Iran	Pearson Correlation		50 (16 male, 34 female) undergraduate students in English Translation and English Literature, aged 18 to 25	**1.** Proficiency Test **2.** McKenzie's (1999) MI Inventory **3.** Writing Index	0.76	**a)** A statistically significant negative relationship between logical intelligence and narrative writing. **b)** Logical intelligence had a negative significant contribution toward vocabulary and language use of narrative writing. **c)** Interpersonal and intrapersonal intelligences showed significant negative relation to vocabulary of writing, the only significant positive relationship was between mechanics of writing and verbal intelligence.	Not mentioned.
Al Ghraibeh (2012)	Brain based learning and its relation with multiple intelligences	king Saud University, Saudi Arabia	Mean value and standard deviations , Pearson Correlation		300 university students	**1.** The learning and thinking style measurement **2.** McKenzie's (1999) MI Inventory	A panel of 10 checked the questionnaire	**a)** The results indicates that more repeated method of learning and thinking is based on the left hemisphere of the brain; as it comes out with the highest total of 136 and within a percentage of (45.3%). **b)** In addition, the results that are related to the dominance of the multiple intelligences indicate that personal intelligence, and physical intelligence are the highest respectively; a mean	Checking the logical validity, the instrument was reviewed by ten referees of the specialists in psychology.

								value of (49. 80%). Whereas, intrapersonal intelligence comes third with a mean value of (48, 40%). **c)** Musical intelligence scores the lowest mean value. Regarding connection relation; it is as a statistical function on the level of the (α=0.05) between the natural intelligence and the left hemisphere of the brain on one hand; and the intrapersonal and the integrated intelligence on the other on the other hand. **d)** There is an equal relation with a function at the statistical function of (α=0.01) between the musical intelligence with the right hemisphere and the logical intelligence with the left hemisphere. **e)** There is an equal relation between both of (the bodily and the linguistic intelligences) with the left hemisphere and the spatial intelligence with the right hemisphere.	
Hajhashemi, Yazdi Amirkhiz, and Parasteh Ghombavani (2011)	The Relationship between Iranian EFL High School Students' Multiple Intelligence Scores and Their Use of Learning Strategies	Iran	Descriptive Statistics, Pearson Product-Moment Correlation		229 (121 male, 108 female) Iranian EFL high school students	**1.** McKenzie's (1999) MI Inventory **2.** The Strategy Inventory for Language Learning (SILL) Questionnaire	0.92 (N=30)	**a)** A low, positive correlation between the two variables of MI and learning strategies **b)** A low, positive correlation between MI and different strategy types. The highest correlation was seen between meta-cognitive strategies and MI, followed by	**Persian version** of McKenzie's MI Inventory (1999) validated by Hajhashemi and Wong (2010)

								compensation and cognitive strategies. **c)** Students mostly use meta-cognitive strategies followed by social strategies.	
Ostankova (2011)	Differentiated instruction in a mixed-ability classroom: A workshop for Kamchatka in-service school teachers				Workshop				
Ibragimova (2011)	Multiple intelligences theory in action in EFL classes: A case study	Cyprus		qualitative case study	148 (108 male, 40 females) students aged 16 to 28) and 10 teachers at EMU EPS (age range between 28 and 47)	**1)** McKenzie's (1999) MI inventory **2)** Textbook evaluation **3)** Classroom observation **4)** Teacher interviews for triangulation		**a)** There were discrepancies between the students' and textbooks' MI profiles. **b)** The students' most dominant intelligence type was intrapersonal intelligence, while the textbooks' most dominant intelligence was obtained to be linguistic intelligence. **c)** Similar results were obtained from classroom observations. That is, the observed classroom activities did not correspond to the students'' MI profiles. As for the analysis of the textbooks' MI profile, it was found out that there was a wide range of distribution of eight intelligences in the textbook activities. This means that there is no balanced distribution in the textbook activities in terms of the intelligence types addressed to. Although teachers reported that MI Theory is important and it affects	adapted **English** and **Turkish** versions of McKenzie's (1999) MI Inventory

								their teaching and their students‟ learning positively, the classroom observations showed that eight intelligences were not catered for in balance in their classes.	
Zare-ee and Shahi (2010)	The relationship between learning styles and multiple intelligences	University of Kashan, Kashan, Iran			300 university students	**1.** A modified form of McKenzie's (1999) MI Inventory. **2.** learning styles questionnaire taken from the website of Waubonsee Community College Learning Enhancement Center		**a)** visual style was highly correlated with all kinds of multiple intelligences, very strongly correlated with interpersonal and intrapersonal intelligences at the 0.05 level (2-tailed) and strongly correlated with Natural, Musical, Logical, Existential, Kinesthetic, Verbal and Visual-Spatial intelligences at the 0.01 level (2-tailed). **b)** Strong, positive correlations between Auditory Style and Natural and Existential intelligences at the 0.01 level (2-tailed) was also found. **c)** Auditory Style and Visual-Spatial intelligences were not associated.	Only abstract accessible
Hajhashemi and Wong (2010)	A validation study of the Persian version of Mckenzie's (1999) multiple intelligences inventory to measure MI profiles of Pre-University students	Iran			176 (78 male, 95 female) pre-university students (grade12, 18 years old)	McKenzie's (1999) MI inventory	0.90	**a)** High reliability of the Persian version of the questionnaire **b)** A moderate to high relationship between gender and MI profiles of the students	**Persian version** (Translation, back translation, accuracy and content checking by two independent ESL professional translators, two Education experts and two psychologists
Hammoudi (2010)	Multiple Intelligences and Teaching English as a Foreign	Algeria			97 (23 male , 74 female) second-year secondary school pupils	McKenzie's (1999) MI inventory.		**a)** Students' ability to comprehend the teaching material improved considerably: The	Not mentioned.

	Language The Case of Second-Year Pupils at Malika Gaid Secondary School Sétif							questionnaire revealed that 90.01 % of the population favored the MI based lesson plans over the traditional ones. The teacher's reply to the questionnaire showed that the MI based material did enhance the pupils' motivation, facilitated the teacher's task and resulted in better results. The sample of the second purpose was one hundred secondary school pupils. They were given the Multiple Intelligences Inventory to diagnose the pupils who have a high level of Linguistic Intelligence. Next, we have calculated the mean of the marks each pupil has had during the whole academic year, separating the high from the middle and low achievers. Afterwards, we have compared the marks of the high English language achievers with their Linguistic Intelligence level to see whether there is a relationship between Linguistic Intelligence and their achievement. McKenzie's (1999) multiple intelligences inventory enabled us to understand that English language learning is intrinsically related to Linguistic Intelligence. It showed that 80.39 per cent of the pupils who got good marks in English examinations had strong Linguistic Intelligence. In	

								addition to the main aim of this research work, two salient objectives have been reached: (a) A new teaching approach labeled ECPTA (Ending Classroom Prescribed Teaching Approaches) which takes into account the cultural background of the learner, and (b) new intelligences which respect Gardner's (2003) criteria: (a) the existence of idiot savants, prodigies and other exceptional individuals (b) an identifiable core operation or set of operations, and (c) an evolutionary history and evolutionary plausibility.	
Rahimi and Qannadzadeh (2010)	Quantitative usage of logical connectors in Iranians' EFL essay writing and logical and linguistic	Iran	Descriptive Statistics, correlations		100 (38 male and 62 female) university students in English Translation or English Literature, aged 19 to 24	**1.** Three essay-type, single-page compositions written in English by each of the 100 participants, as their assigned Homework, were available for the study, forming a corpus of 300 essays, as the materials of the study. **2.** Two intelligences of McKenzie's (1999) MI inventory	0.81 (for two domains)	**a)** Students with higher logical/ mathematical intelligence tend to use more tokens of logical connectors in their EFL essay writing, though they do not necessarily avoid repetition in using the connectors. **b)** linguistic intelligence, which was claimed to be the main factor responsible for second or foreign language skills (Gardner, 1983), turned out to be less significant to the token rate of logical connectors in EFL essay-writing than the logical intelligence, though the students with higher linguistic intelligence possibly tend to avoid repetition in using logical connectors.	**Persian version** (translation, back translation by experts)

Bemani Naeini and Pandian (2010)	On the Relationship of Multiple Intelligences With Listening Proficiency and Attitudes Among Iranian TEFL University Students	Islamic Azad University– Mashhad Branch, Mashhad, Iran	Descriptive Statistics, mean scores, Pearson product-moment correlation		60 (10 male, 50 female) university TEFL students aged 19-26	**1.** McKenzie's (1999) MI Inventory **2.** The listening section of a retired TOEFL test	The content validity was verified by a panel of three Experts with an average of 15 years teaching and research experience.	**a)** No significant relationship between the score of listening and any of the MIs. **b)** No significant difference between MIs and attitudes	Checking the content validity by a panel of experts consisting of three academic members of the English department, with an average of 15 years of experience teaching and doing research in applied linguistics
Naoe (2010)	The Multiple Intelligences of Grade V Pupils: Bases for the Proposed Learning Enhancement Program Of David Elementary School	Philippines	t- Test,		34 [Fifteen (15) grade V pupils, their respective (15) parents, and four (4) teachers] at David Elementary School	Different types of questionnaire were used to gather data in identifying the multiple intelligences of the pupil-respondents. The Parent's Questionnaire for Multiple Intelligences Assessment was adopted from Nicholson-Nelson and Kristen (1998), in Developing Student's Multiple Intelligences. The questionnaire was provided to the participants during the 1st Philippine Multiple Intelligences Convention last February 11-12, 2005, which was attended by the researcher herself. Since some parents may not be	experienced and competent teachers	**a)** The pupils possessed all the eight intelligences in varied degrees. Bodily-kinesthetic intelligence, as perceived by the pupils, appeared to be their strongest intelligence. **b)** Among the three important subjects that the researcher tested namely Science, English, and Math, the pupil respondents appeared to be naturalists. Both the parent and teacher groups had almost the same perception with regard to the children's pupils' intelligences. However, it was in the intrapersonal intelligence that the two adult groups differed significantly in their perception. Except for this area of intelligence, the null hypothesis that there is no significant difference between the parents' and the teachers' perception on the different multiple intelligences of the pupils	Checking and improving by experienced teachers in the field

						able to understand the English questionnaire, this was translated in Filipino with the help of a Filipino subject teacher. The researcher sought the assistance of the competent educators to design the Teacher's Questionnaire. An observational checklist was used as another instrument to identify the multiple intelligences of the pupils. This was adapted from the different published books authored by Thomas Armstrong (1994). The researcher also solicited suggestions and feedbacks from her adviser and other educators with working knowledge on multiple intelligences. In addition, the instrument was subjected to the scrutiny of the members of the Oral Examination Committee of the researcher. Their suggestions and recommendations were integrated to improve the tool. And McKenzie's (1999) MI inventory		is accepted. The activities that integrate the MI theory were most preferred by the pupils, which gave them relatively high scores in the posttest. This result led to the rejection of the null hypothesis stating a no significant difference in the pupils' pretest and posttest scores before and after the administration of the Multiple Intelligences activities. Indeed, integrating and applying the Multiple Intelligence theory in the classroom can make learning fun, interesting, and more meaningful in the lives of the children.	

Razmjoo et al. (2009)	On the relationship between multiple intelligences, vocabulary learning knowledge and vocabulary learning strategies among the Iranian EFL learners	Iran	descriptive (mean + Standard Deviation, SD) and inferential analyses (Correlation + Multiple Regressions)		47 (out of 100 initial samples) (84% females and 16% males) senior university students in English Language Teaching, aged 20 to 24	**1.** The Vocabulary Levels Test (VLT) **2.** Vocabulary Learning Strategies Questionnaire **3.** McKenzie's (1999) MI inventory	above 0.90	**a)** There is a relationship between MI and vocabulary learning knowledge. **b)** Among different domains of intelligence, linguistic and natural intelligences make statistically significant contribution to the prediction of vocabulary learning knowledge. **c)** Stepwise multiple regression analysis confirmed the same finding. Concerning the relationship between MI and vocabulary strategies, the results indicate that among 5 categories of strategies, determination, social and memory strategies have a significant relationship with several domains of MI. Seemingly, the results are context-bound not universal.	**Persian version** (translation, back translation, construct validity of the items [factor analysis])
Mokhtar, Majid, and Foo (2008)	Teaching information literacy through learning styles: The application of Gardner's multiple intelligences	Singapore			Two secondary (high) schools in Singapore. The subjects were Secondary 3 Express stream students, aged 14 to 15	An adapted version of McKenzie's (1999) MI Inventory	Adapted version of MCkenzie's MI Inventory	**a)** Performance of students who had undergone IL training through the application of learning styles was superior in their project work.	Not mentioned (a copy of the English version is in appendix)
Razmjoo (2008)	On the relationship between multiple intelligences and language proficiency	Shiraz University, Shiraz, Iran	The data gathered were analysed descriptively utilizing central tendency measures (mean and standard deviation). Moreover, the collected data		278 (179 male, 99 female) Iranians taking part in the Ph.D Entrance exam, aged 25 to 49	**1.** An MI questionnaire **2.** A 100-item language proficiency test	0.89+ item-constructors committee, 8 experienced assistant professors	**a)** No significant relationship between language proficiency and the combination of intelligences in general and the types of intelligences in particular. **b)** No significant difference between male and female participants regarding language proficiency and types of intelligences.	**Persian version** (checking the validity by the item-constructors committee, 8 experienced assistant professors in the field; checking the reliability by calculating the

			were analysed inferentially using correlation, regression analyses and independent t-test.					**c)** None of the intelligence types was diagnosed as the predictor for language proficiency. **d)** no significant relationship between multiple intelligences and English language proficiency in the Iranian context	internal consistency).
Marefat (2007)	Multiple Intelligences: Voices from an EFL Writing Class	Allameh Tabatabaii University, Iran	Descriptive statistics, Regression,		72 male and female undergradute students in English literature and translation, aged 19-27	**1.** The students' average scores on three essays **2.** McKenzie's (1999) MI Inventory		**a)** kinesthetic, existential, and interpersonal intelligences are making the greatest contribution toward predicting writing score.	Not mentioned.
Hashemi (2007)	On the relationship between Multiple Intelligences and Reading Comprehension Tasks: An Authentic MI Theory-based Assessment	Islamic Azad University, Roudehen Branch, Iran	Descriptive Statistics, correlation, Regression		122 university students, aged 20 to 30	**1.** Validated IELTS test (2002) **2.** McKenzie's (1999) MI Inventory		**a)** Kinesthetic and verbal intelligence make the greatest contribution toward predicting reading ability scores.	Not mentioned.
Burke (2007)	The Misapplications of Gardner's Music Intelligence in Victorian State Schools [online]								
Shariffudin and Foong (2007)	A profile of multiple intelligence for high achievers and normal students: A case study in Sarawak	Sarawak, Malaysia	Descriptive	A case study using a survey	310 secondary students [160 (80 male, 80 female) high achievers and 150 (75 male, 75 female) normal students]	McKenzie's (1999) MI Inventory		**a)** Normal students possess the following intelligences: Interpersonal> Bodily/Kinesthetic > Musical/Rhythmic > Visual/Spatial> Verbal/Linguistic = Logical/Mathematical > Intrapersonal> Naturalist. Whilst for high achievers possess the following intelligences:	Not mentioned.

								Interpersonal> Logical/Mathematical > Intrapersonal> Visual/Spatial> Verbal/Linguistic> Naturalist> Musical/Rhythmic> Bodily/Kinesthetic. Based on these result, a theoretical framework was proposed to develop a software to match students' learning styles (Multiple Intelligence) with computer and web based learning environments. Through an awareness of preferred learning styles and environments, more effective learning environments can be set up to assist students in their learning.	
Al-Balhan (2006)	Multiple intelligence styles in relation to improved academic performance in Kuwaiti middle school reading	Kuwait	Descriptive statistics, T-tests, one-way ANOVA	experimental study	200 (98 male, 102 female) students from secondary schools	**1.** McKenzie's (1999) MI Inventory **2.** Students' reading performance	0.85	**a)** The students in the experimental group (mean = 48.99), whose multiple intelligence was applied to learning, performed better overall for the academic year than the students in the control group (mean = 45.30) who studied using traditional teaching methodology. **b)** The experimental group results show that, with regards to grades during each quarter period, female students attending private institutions living in suburban areas had greater reading improvement.	Checked and revised by experts in the field.
Chang (2006)	Teaching accounting to	Malaysia	Quantitative		136 first semester	McKenzie's (1999) MI Inventory		**a)** logical-mathematical intelligence is undeniably	Not mentioned.

	learners with diverse intelligence		regression		students of an Australian offshore franchise business degree programme			more relevant to the mid-term examination scores; indicating that the 'number smart' students are more receptive to the knowledge of accounting, thus triggering the need to search for alternative pedagogies for students with the other seven distinctive intelligences as discussed in the second part of this paper.	
Krishnasamy, Lee, and Palanippan (2006)	Alternative learning approaches for electronic learning environments in smart schools: Survey results	Malaysia	Descriptive statistics, correlation		600 students from selected smart schools	**1.** McKenzie's (1999) MI inventory **2.** The e-learning preferences questionnaire		**a)** web-based instruction in its present form was more preferred by students whose intelligences were visual/spacial and interpersonal. **b)** Verbal/linguistic and logical/ mathematical students reported less benefit from e-learning, perhaps because these students were more oriented towards traditional classroom learning	Not mentioned.
Campbell (2004)	The design and development of a simulation to teach water conservation to primary school students								
Sung (2004)	Enhancing Teaching Strategies based on Multiple Intelligences				Recommended-Workshop				
de Lima Botelho (2003)	Multiple Intelligences theory in English language teaching: An analysis of current textbooks,					Adapted version of Mckenzie's Mi Inventory			

	materials and teachers' perceptions								
Palmberg (2002)	Catering for Multiple Intelligences in EFL Coursebooks				recommended				

4.2.1.2 Researcher-made Questionnaire

The questionnaire includes two sections (see Appendix B). In the first part, the researcher aimed to identify participants' level of agreement with statements related to the use of videos in different modes of instruction. This section of the questionnaire contained 19 items using a likert scale where 1 corresponded to 'completely disagree' and 5 to 'completely agree'. The second part of the questionnaire included some questions using a dichotomous response and an open-ended question. For example, students were asked to rate the number of times they used the videos provided for the subject per week, and how often they used the online videos. These questions would help determine whether there is any relationship between frequency of use of videos and MI. Questions designed to elicit the students' positive or negative attitudes towards the video resources would be used to explore relationships with MI. This part gave students a clear voice on issues, experiences and perceptions of online videos utilized in different modes of instruction (online, blended or face-to-face). It also provided them with an opportunity to add anything that may not have been addressed within this framework.

4.2.1.2.1 Validity of the Researcher-made Questionnaire

The questions were guided by a large pool of items derived from the literature on online videos and different questionnaires. By combining the related questions, the most relevant ones were selected and adopted for the study. The wording was improved to avoid ambiguity, thus ensuring clarity in each question and excluding any probable overlapping in questions. The validity of the instrument was then reviewed by five experts in the field: two lecturers with PhDs who were familiar with the study, and three members of the supervisory team. They examined the items of the questionnaire to ensure that each item was superficially measuring what it was supposed to measure (Ary et al., 2014). By identifying the appropriateness and the workability of the intended data collection questionnaire, the face validity of the items was

determined. After having made the required modifications, the questions were considered appropriate and approval to proceed was granted.

4.2.1.3 Rationale for the Online Survey Data Collection

The quantitative research was carried out exclusively through the use of online surveys as studies (e.g., Carini, Hayek, Kuh, Kennedy, & Ouimet, 2003; Delaney, Johnson, Johnson, & Treslan, 2010; Granello & Wheaton, 2004; Lewis, Watson, & White, 2009) have revealed its effectiveness and efficiency in collecting data. Several reasons have been suggested here. For example, Delaney et al. (2010) claim that it provides the potential to reach students across different modes and different sites. It also provides a user-friendly setting encouraging participants to complete the questionnaire freely. In a study of web surveys in on par with those completed on paper, Carini et al. (2003) collected data from 151,910 students (276 colleges & universities) in the National Survey of Student Engagement (NSSE). The findings revealed that students who completed web-based surveys responded as favorably as those who engaged in paper surveys and web responses yielded significantly greater responses than paper. Some more benefits and reasons to support the online survey as addressed by Teo (2013) include reducing costs, simplifying data collection time and entry from different background respondents in different locations, encouraging participation and increasing response rates by using pictures, colours and other elements in the online surveys. Lefever, Dal, and Matthíasdóttir (2007) also state the potential of web-based surveys in "accessing a large and geographically distributed population, along with being time and cost efficient for the researcher" (p. 581) as paper-and-pencil surveys are bound to time and location and there is no guarantee to find out whether respondents are willing to participate in the study. However, online surveys help respondents to participate at their own convenient time and location. Furthermore, the use of paper-and-pencil surveys needs manual data entry, which usually

suffers from human-error coding. In short, the online survey eliminates these types of issues as the respondents' data will be submitted and collected automatically. It also incorporates the use of more options during set up, such as using an asterisk (i.e., respondent must answer to move to the next item), thus minimising possible missing data. Granello and Wheaton (2004) also outline the advantages of online surveys based on their large scale study as, "reduced response time, lower cost, ease of data entry, flexibility of and control over format, advances in technology, recipient acceptance of the format, and the ability to obtain additional response-set information" (p. 388).

Accompanying the increased reliance on online surveys, a number of advantages of this method that were collected from various research studies have been addressed by Lewis, Watson, and White (2009). These advantages are listed as,

> the ability to acquire large and diverse samples; greater time efficiency; the reduced costs and fixed costs (i.e., the costs of conducting an Internet survey remain the same irrespective of the number of respondents); the reductions in data entry errors; the capacity to incorporate visual and auditory stimuli; heightened anonymity and confidentiality, which is particularly advantageous for surveys addressing sensitive issues; and greater convenience for respondents in terms of the time and place of participation. (p. 107)

Furthermore, the number of people accessing the Internet continues to increase day-by-day. In Australia, for instance, the number of households with home access to the internet reached 7.7 million in 2014–15, which translates to 86 percent of all households (up from 83 percent in 2012-13) (ABS, 2016).

4.2.2 Sources of Qualitative Data and Rationale for their Employment

In addition to the questionnaires, interviews were used as the complementary and supplementary sources of data. It should be acknowledged from the outset that the rationale for

choosing these sources of data was twofold. The first is to enhance the trustworthiness of the study and the second is to increase the depth of understanding of the issue under study. Below is a brief explanation of this source of data.

4.2.2.1 Retrospective interviews

The interviews with participants are to serve as a key qualitative data source for the present study. They were conducted to complement and illuminate the data based on the questionnaires, allowing the researcher to elicit certain information probably not revealed through other sources of data collection. Semi-structured in-depth interviews were selected as a research tool for this study. Thus it was possible to obtain further clarification from the participants; their perceptions and understanding of videos utilized through the subjects, their dominant preferences, and talent areas. As Chamot (2004) maintains, in this kind of interview, participants "are asked to describe what they are thinking or doing during a recently completed learning task" (p. 15). Furthermore, the researcher has the ability to more fully obtain clarification and to probe further where necessary.

Asking a number of predetermined questions and topics in a systematic and consistent way, Berg and Lune (2012) state that "the interviewers are allowed freedom to digress; that is, the interviewers are permitted (in fact expected) to probe far beyond the answers to their prepared standardized questions" (p. 112). Probes are used to "deepen the response to a question, increase the richness and depth of responses, and give clues to the interviewee about the level of response that is desired" (Patton, 2015, p. 465). According to Berg and Lune (2012), the use of probes elaborates on what interviewees have answered to a given question. The interviewer's role during the interview is of vital importance since Patton (2015) postulates that "the quality of the information obtained during an interview is largely dependent on the interviewer" (p.

427). To facilitate the interviewer role, different interview protocols, perception questionnaires, and multiple intelligences inventories were consulted. More explanation is provided in the following section.

4.2.2.1.1 Validity of the Interview Questionnaire

Semi-structured interviews were guided by a large pool of questions derived from the literature on online videos and literature on multiple intelligences. By combining the related interview questions supporting the objectives of the study, the most relevant questions were selected and rephrased and the repeated ones were removed. According to Ary et al. (2014), "construct validity can be assessed by having some colleagues who are familiar with the purpose of the survey" (p. 435). Therefore, the validity of the instrument was initially reviewed by a panel of experts consisting of two lecturers with PhDs in the field who were familiar with the study. They were asked to examine the items and to judge "whether they are really measuring what they are supposed to measure" (Ary et al., 2014, p. 435) and whether they were a representative sample of the variables under investigation. After that, the questions were sent to my supervisory team for further revision. Subsequent meetings with them revealed the need for more revision and modification in order to capture the objectives of the study. As a result, more consideration was given to the questions and finally the interview questions created for both the lecturers and students were considered to contain face validity and approval to begin data collection was granted. The validation procedure for both researcher-made questionnaire and the interview questions are depicted below.

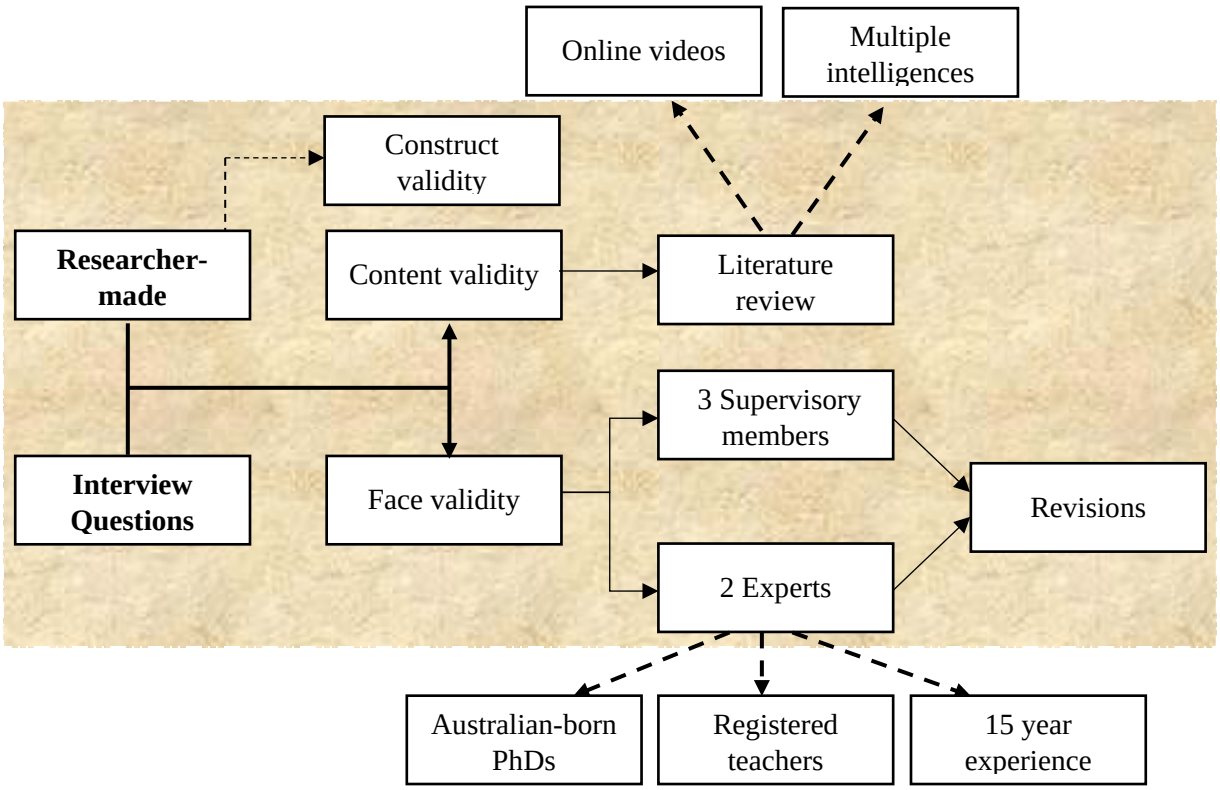


Figure 4-4: Validity and Reliability procedure for Interview questions and Researcher-made Questionnaire

4.3 Triangulation

Triangulation is a tactic of using "multiple data-collection techniques, multiple theories, multiple researchers, multiple methodologies, or combinations of these four categories of research activities" (Berg & Lune, 2012, p. 6). According to Patton (2015), "[T]riangulation strengthens a study by combining methods or data, including using both quantitative and qualitative approaches" (p. 316). Denzin (1978, cited in Berg & Lune, 2012, p. 6) outlines triangulation into four categories: 1) Data triangulation (using different sources); 2) Investigator triangulation (using multiple researchers); 3) Theory triangulation (using multiple perspectives); and 4) Methodological triangulation (using multiple methods). To combat the validity threats in qualitative research, Maxwell (2009; cited in Yin, 2011) recommends "to collect converging evidence from different sources (triangulation)" (p. 79). In this study, triangulation by data including both quantitative (i.e., online surveys) and qualitative (i.e.,

interview), as well as triangulation by method and theory by considering Denzin's (2010) approach that triangulation includes multiple theoretical perspectives and multiple analysis techniques in addition to multiple data-collection procedures was chosen for analysing students' data. These large quantities of data "increase the depth of understanding an investigation can yield" (Berg & Lune, 2012, p. 8) and enable readers "to know the cases well and to consider corroborating cases or counter-examples" (Duff, 2008, p. 44). Triangulation, in return, strengthens trustworthiness in research and ensures the construct validity of the findings. Many researchers (Ary et al., 2014; Berg & Lune, 2012; Creswell, 2014; Duff, 2008; Heigham & Croker, 2009; Patton, 2015; Yin, 2011) believe that triangulation augments the credibility of the study and therefore, reduces the construct validity threat. Accordingly, Ary et al. (2014) state that a combination of data sources (i.e., interviews, surveys), and the use of different methods "increase the likelihood that the phenomenon under study is being understood from various points of view" (p. 532). Implementing various data-collection techniques and comparing the results can determine whether "data analysis and findings are well supported across different sources of information" (Heigham & Croker, 2009, p. 127).

4.4 Data Collection Procedure

Before starting data collection, ethical clearance was sought from the Human Research Ethics Committee at the university. Following the required standard ethical codes, the project was allocated Ethics Approval Number H5239. As part of ethics approval, contacts were made with the academics teaching the subject and the subject coordinators to seek their permission to conduct a survey through questionnaires and interviews with a sample of students enrolled in their subjects. A number of lecturers within both disciplines were also approached for their thoughts on online videos. Permission to speak to the students in the respective classes was sought after ethics approval was granted and before data collection. This

was to invite them to take part in the research project and to answer any questions they may have about their possible participation. They were also informed that participation in the study was voluntary and they were under no obligation to accept the invitation. Furthermore, they were informed that all information gathered for the purpose of the research would be treated confidentially and their identity would not be revealed in the thesis or research publications. Immediately after each session, lecturers were provided with the online survey web links for distribution to their students.

As an incentive for participation, 4 gift cards were made available. Research has shown that a token incentive effectively increases the response rate (Helgeson, Voss, & Terpening, 2002; Jobber, Saunders, & Mitchell, 2004; Marsden & Wright, 2010; Newby, Watson, & Woodliff, 2003). The literature on research ethics supports the judicious use of incentives. For example, Grant and Sugarman (2004) argue

> incentives can be used to recruit subjects in many situations without any ethical qualms where all other ethical criteria are met—that is to say, incentives themselves are not the ethical problem here, generally speaking. If the research meets the usual ethical criteria for human subjects research, the introduction of incentives will generally be benign. (p. 732)

Accordingly, the URL link to the online questionnaires for the first and second year psychology students hosted on SurveyMonkey® were uploaded and set up in the Sona System (an experiment management system used by psychology staff and students) to allocate the 1 course credit to each student for participation. Other level participants were given a chance to go into the draw for a $50 Gift Card. However, for participation in the interview, they were all given the same chance to go into the draw for one of three $50 Gift Cards. A summary of the procedure is depicted in Figure 4-5.

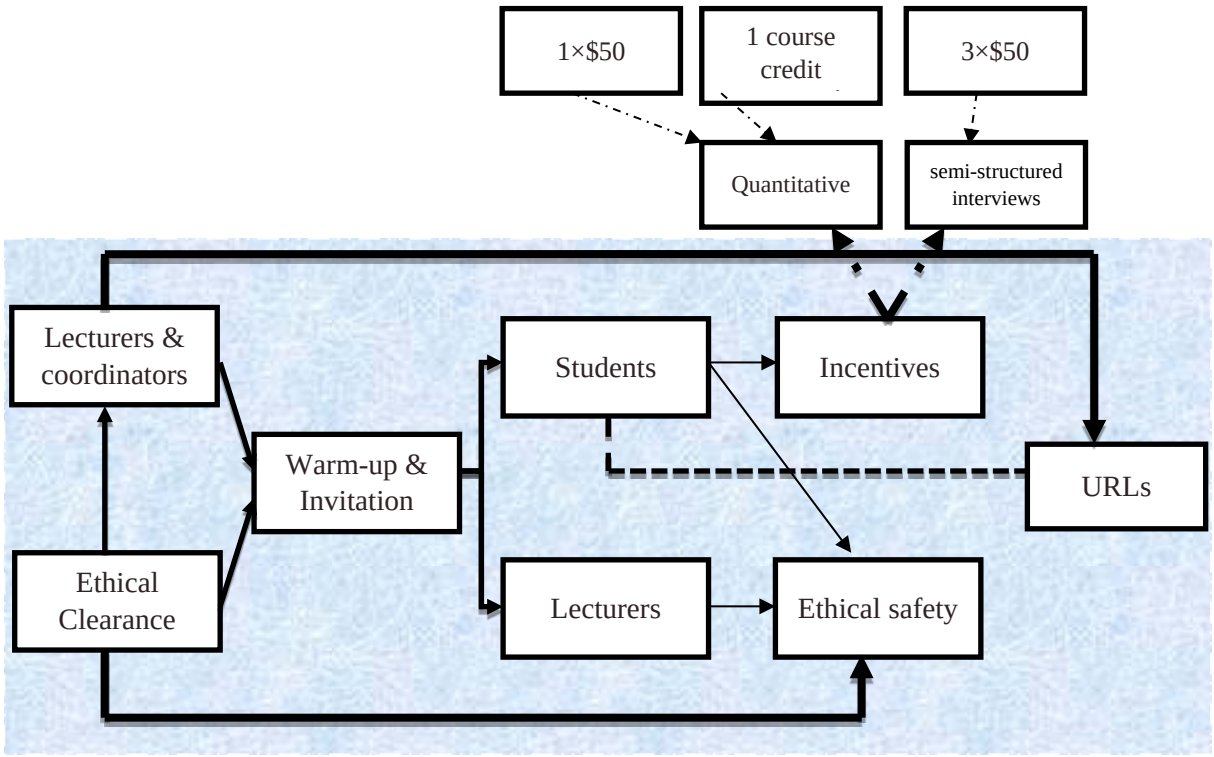


Figure 4-5: Data Collection Procedure

In this study, the researcher collected data sequentially in two phases with one form of data collection following the other, performing certain activities in each phase. This step-by-step data collection planning is called “explanatory sequential mixed-methods design” (Creswell, 2012, p. 542; 2014, p. 220) (see Figure 3-3). In a similar vein, Creswell posits that perhaps it is the most popular form of mixed-methods design in educational research. The rationale for using this approach was that the quantitative data and results provide a general picture of the research problem. Thus, more analysis, particularly through qualitative data collection, was required to clearly articulate the general picture and to give students an opportunity to clearly explain their perceptions of online video-assisted subjects in their studies.

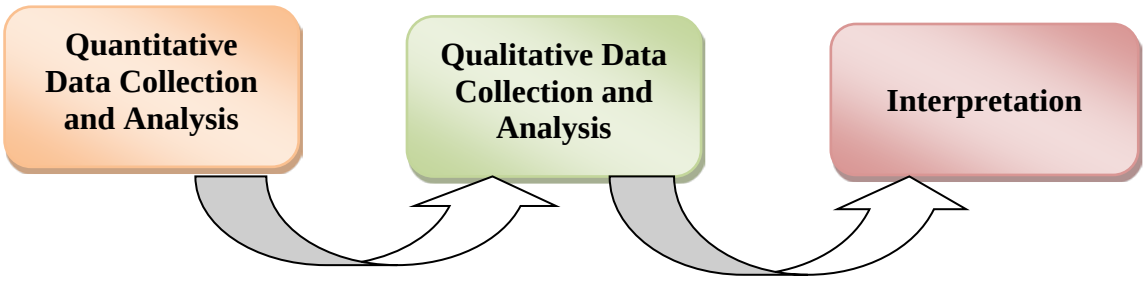


Figure 4-6: Explanatory sequential mixed-methods design

As can be seen in Table 4-2, the data were gathered in various semesters and within 8 weeks. In each week, certain activities were performed. It should be reiterated here that for the quantitative data, the participants were the enrolled students at the afore-mentioned subjects in different modes. To this end, the data collection procedure of the study began in the second semester of the academic year 2013-2014. It then continued to the first semester 2014-2015 as some subjects (i.e., ES1001) were offered only in the first semester. To identify the intelligence profile of the participants, the MI inventory was distributed online among the study informants. The inventory was distributed in the third week of the semester as not all students (e.g., face-to-face mode) are available up to the second week. The researcher-made questionnaire was then administered online to the students in the week following the administration of the MI inventory. However, for the qualitative data collection, which included 13 participants and 13 lecturers of both disciplines, a semi-structured interview was conducted with each participant to further provide extra data not revealed via the quantitative methodology. The interview sessions were audiotaped for future transcription and analysis which is in line with what Seidman (2013, p. 117) holds. He postulates that "[T]he primary method of creating text from interviews is to tape-record the interviews and to transcribe them". Table 1 demonstrates the data collection procedures. During each interview session, participants were assured that all information gathered for the purpose of the research would be treated confidentially and their identity would not be revealed in the thesis or research publications. They were also informed

that they would be identified in the interview data collection process by codes and pseudonyms. Additionally, lecturers were asked to sign Informed Consent Forms on the same session.

Table 4-2: Data Collection Procedure for each Semester

Week	Activity 1	Activity 2
Three	Explaining the aim of the study,	Distributing and collecting the consent forms and the MI validated questionnaire online
Four	Distributing the online researcher-made questionnaire	
Five	**Quantitative data:** entering data into SPSS, checking the accuracy of data entry, missing data, and outliers, examining the normality of variables and running the required descriptive and inferential statistics	Analysing students' open-ended questions and developing a temporary coding system
Six	Selecting willing participants	Dividing students (*N*=13) and their lecturers (*N*=13) into 5 groups based on their free time during the week
Seven Eight, Nine	**Group 1:** Participants gave semi-structured interviews.	All interview sessions were audiotaped.
	Group 2: Participants gave semi-structured interviews	
	Group 3: Participants gave semi-structured interviews	
	Group 4: Participants gave semi-structured interviews	
	Group 5: Participants gave semi-structured interviews	
Ten & eleven	Transcribing audio-taped interviews, segmenting the transcribed interviews, and finally coding the segmented interviews	
Twelve	Performing rating reliability	

4.4.1.1.1 Rationale for interview participants

Because of the depth and the extent of the information sought in qualitative studies, qualitative samples are usually small as there is no common rule for the required participants in a qualitative study. According to Ary et al. (2014) "practical considerations such as time, money, and availability of participants influence the size of the sample" (pp. 456-457). Seidman (2013)

defines two criteria for the sample size number including sufficiency and saturation. Additionally he states that,

> I would be reluctant to establish such a number. “Enough” is an interactive reflection of every step of the interview process and different for each study and each researcher. The criteria of sufficiency and saturation are useful, but practical exigencies of time, money, and other resources also play a role, especially in doctoral research. (p. 58)

However, the primary sample size criterion considered in the present study is data saturation to terminate interview data collection when no new information is forthcoming. A number of writers (e.g., Creswell, 2012; Heigham & Croker, 2009; Maykut & Morehouse, 2005; Seidman, 2013) have discussed the point at which no new information could be obtained from the interviewees. According to Creswell (2012) “when you reach this point is a subjective assessment, but most qualitative researchers realize when it occurs” (p. 251). However, as stated by Seidman (2013), even if researchers use “a purposeful sampling technique designed to gain maximum variation and then add to their sample through a snowballing process, they must know when they have interviewed enough participants” (p. 58).

4.4.2 Data Analysis

Incorporating both quantitative and qualitative approaches by way of a mixed design, the analysis of data consisted of two parts: (a) online surveys, and (b) interviews.

4.4.2.1 Online Survey

To analyse the quantitative phase, descriptive and inferential statistics were used to address the questions. Using SPSS version 22 and Microsoft Excel, both online questionnaires were analysed. The MI inventory analysis was made according to its instructions. The researcher-made questionnaire was processed using both Excel and SPSS. Based on the result of the normality test revealing violations of the distribution assumptions of parametric tests,

alternative nonparametric techniques i.e., Mann-Whitney U test and Kruskal-Wallis Test were utilized to compare mean ranks for two and three groups respectively. Further, the researcher-made questionnaire was subjected to Principal Component Analysis (PCA) using SPSS version 22 inspecting the factorability of the components.

4.4.2.2 Interview

Interviews were, as mentioned before, the main source of data in this study. These sets of data are used as the complementary and supplementary sources of data in this study. The subsequent data from students and lecturers' transcripts were employed to provide richer descriptions of students' perceptions and experiences and to further investigate their perspectives about learning through online videos. The interviews were selectively transcribed and analysed by the researcher to ensure that enough care had been taken for the data not to be lost and to elicit the useful information properly. The analysis was conducted via several steps including trimming the recordings, transcribing the interviews and developing a coding system, and finally checking the reliability of the coding scheme. The interview procedure as well as the steps taken in analysing the data are briefly explained in the following.

4.4.2.2.1 Interview Procedure

To complete the interview task, interviews were made either in lecturers' offices or in the researcher's office at a mutually agreed time. While interviewing, extra care was taken to ensure interviewees felt at ease and the researcher's personal opinions did not affect the subjects (Ritchie, Lewis, Nicholls, & Ormston, 2013). In helping researchers to deal with these types of challenges in interview sessions, Ritchie et al. (2013) recommend a number of strategies presented below that were considered carefully for this study.

- Spending more time on the opening subjects to give the participant an opportunity to feel more at ease.

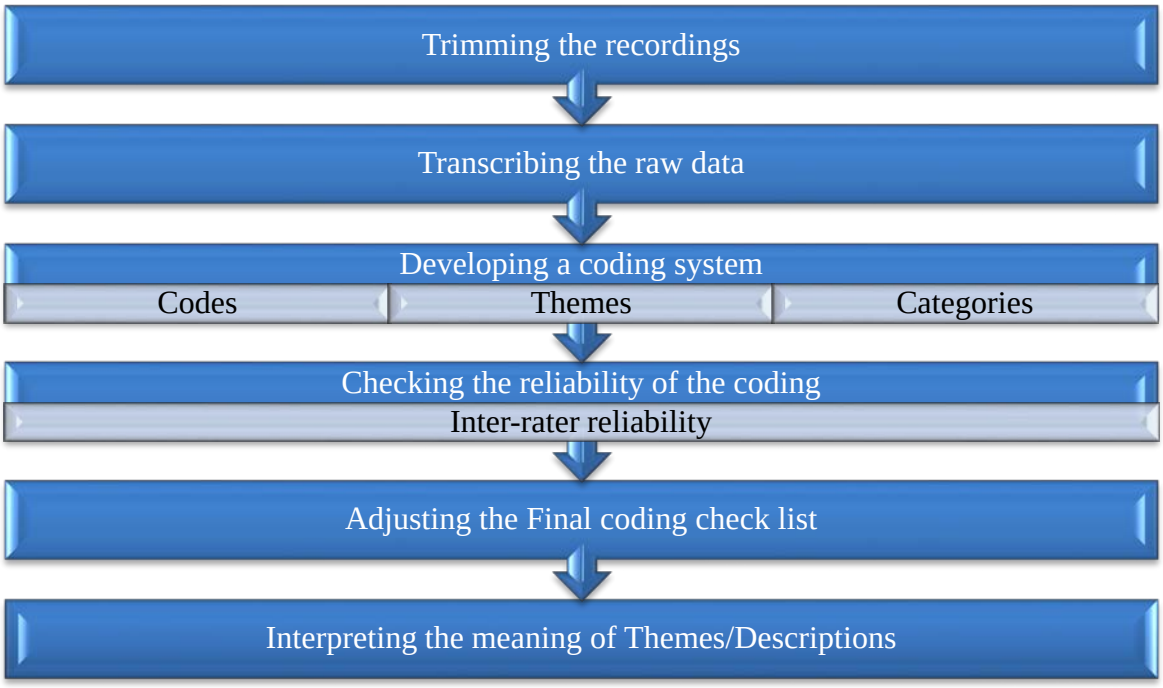
- Focusing more on factual, concrete and descriptive topics before exploring feelings and emotions in depth. Intangible or conceptual questions should also be left until the participant seems more at ease.
- Helping the interviewee to get used to talking, particularly in early stages of the interview, by offering a range of prompts such as 'How did you feel about that? For example, did you feel excited, nervous, interested-?'
- Speaking clearly and calmly, ensuring that questions are clear and straightforward.
- Showing interest and attention and giving plenty of positive reinforcement by maintaining eye contact, nodding and smiling encouragement.
- Stressing that the researcher is interested in everything they have to say, even if it is something the interviewee has not thought about before or they think is not interesting or important.
- Acknowledging that other people have sometimes found this a difficult topic to talk about. (pp. 204-205)

In addition, Creswell (2014) recommends some steps to analyse and interpret the qualitative data, outlined here:

- Step 1. Organize and prepare the data for analysis.
- Step 2. Read through all the data.
- Step 3. Begin detailed analysis with a coding process.
- Step 4. Use the coding process to generate a description of the setting or people as well as categories or themes for analysis.
- Step 5. Advance how the description and themes will be represented in the qualitative narrative.
- Step 6. Make an interpretation or meaning of the data. (pp. 197-200)

The researcher has carefully followed the suggested steps in this study as revealed in Figure 4-7.

Figure 4-7: Interview Data Analysis steps taken in this Study



To reiterate, for the quantitative phase that was collected from students, the online surveys involved 236 (i.e., for the MI Inventory) and 171 (i.e., for the researcher-made questionnaire) respondents from the 1st to 4th year tertiary cohort. However, those completing both questionnaires considered appropriate for the study were 111 respondents as some of the students had changed their residential address and failed to inform the researcher thus obfuscating the possibility for any further matching of the survey data. A decision was taken to work only on clearly matched data. However, for the qualitative phase of the study which involved 13 lecturers and 13 students, the relevant instrument i.e., a semi-structured interview, was used to collect data.

4.4.2.2.2 Audacity and Trimming

Initially the recordings were edited and trimmed using Audacity sound-editing software (version 2.0.6) that is widely known for being free, easy to use, and offering cross-platform compatibility with Windows, Linux, Mac and other operating systems. The software was first

introduced in 1999 by Dominic Mazzoni and Roger Dannenberg at Carnegie Mellon University and released on May 28, 2000 as version 0.8. As of 10 October 2011, it was the 11th most popular download from SourceForge, with 76.5 million downloads (Wikipedia). The software can easily be downloaded from the following link: http://audacity.sourceforge. net/ download/.

4.4.2.2.2.1 Transcribing and Categorising the interviews

The interview recordings of each participant were transcribed verbatim into interview protocols. Transcribing was the most time-consuming part of the research as the time taken by both lecturer and student interviewees ranged between 22 to 51 minutes for students and 31 to 79 minutes for lecturers. For the purpose of transcribing, each interview was listened to several times. Transcribing the recordings, analysing the data, identifying codes and categorizing the transcripts were among the most tedious and difficult tasks the researcher had to undergo in completing the study.

After that, the responses were coded and analysed carefully for themes or aspects relevant to questions as Patton (2015) recommended,

> The challenge of qualitative analysis lies in making sense of massive amounts of data. This involves reducing the volume of raw information, sifting trivia from significance, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal…No absolute rules exist, except perhaps this: Do your very best with your full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study. (pp. 521-522)

Coding is the process of making decisions on how to categorize a particular piece of data and organize the data by bracketing chunks and assigning a word symbolically representing a category (Creswell, 2014; Rossman & Rallis, 2012; Saldana, 2013). In other words, it involves segmenting sentences and/or paragraphs into categories, and labelling those categories with a

word or short phrase that symbolically assigns a summative and salient attribute for a portion of data. Accordingly, a number of categories and themes were identified and important responses or quotations were singled out. The researcher reviewed and revised the list of categories several times and removed redundant or overlapped categories until he was satisfied with the analyses.

4.4.2.2.3 Reliability of the Coding Scheme

In terms of coding reliability, as the final step, the researcher performed inter-rater reliability as elaborated below.

4.4.2.2.3.1 Inter-rater reliability

Inter-rater agreement is a procedure for assessing dependability (reliability) recommended by several researchers and authors (e.g., Ary, Jacobs, & Sorensen, 2010; Bordens & Abbott, 2011; Creswell, 2012). It involves observations and recording scores made by two or more individuals of an individual's or several individuals' behavior, and then comparing the observers' scores to determine whether they are similar (Creswell, 2012). Ary et al. (2014) address this strategy as "the degree to which the ratings of two independent raters agree" (p. 678). Accordingly, they state that having two or more trained raters who do the rating of an individual independently usually increases the accuracy or reliability of ratings. Several reasons have been suggested for why inter-rater agreement is reliable. For example, Creswell (2012) claims that the inter-rater agreement has the advantage of negating any individual's bias that might be brought to scoring. Bakeman and Gottman (1997; cited in Bordens & Abbott, 2011) point out three reasons for inter-rater reliability and recommend these to avoid the single-observer idiosyncrasies issue. The reasons are:

> First, establishing inter-rater reliability helps ensure that your observers are accurate and that you can reproduce your procedures. Second, you can check to see

> that your observers meet some standard that you have established. Third, you can detect and correct any problems with additional observer training. (p. 230)

To this end, the researcher randomly selected a transcript of each group (students and lecturers) and asked two university peers with many years of teaching experience and a strong qualitative background to code the transcripts individually using the coding labels identified by the researcher. The coders were free to add other codes they might identify. After completing their transcripts' coding, the university peers compared their results and coding checklists to the originals to establish the degree of agreement among coders and determine whether all coders labeled components of the transcript the same. As recommended by Bordens and Abbott (2011), the simplest way to assess inter-rater reliability is to evaluate percent agreement which can be calculated according to the following formula:

$$\frac{\text{Total number of agreements}}{\text{Total number of observations}} \times 100$$

Utilizing this formula, the results of coders and their percent agreement are presented in the following tables.

Table 4-3: The Percentage Agreement of the Main and Sub-categories in Protocol One & Two

	Protocol	Researcher	Coder1	Coder 2	Reliability		Inter-rater Reliability	Overall Average
					Coder1	Coder 2		
Main categories	**One**	34	33	31	97%	91.1%	94.05%	**94.50%**
	Two	30	30	27	100%	90%	95%	
Sub-categories	**One**	45	43	44	95.5%	97.7%	96.6%	**93.75%**
	Two	33	31	29	93.9%	87.9%	90.9%	

As shown in Table 4.3, the overall reliability for the main/subcategories are **94.50%** and **93.75%** which reveals a high reliability agreement. Lastly, the feedback collected from peers was further discussed and adjusted in the checklist and used as the final checklist for categorizing the data.

4.5 Chapter Summary

This chapter explained the research methodology employed in the study. A mixed-methods approach was used as the most appropriate research design to answer research questions and to get an accurate and in-depth understanding of students' and lecturers' experiences and perceptions about learning through online videos, across different modes, with respect to their relationship with multiple intelligences. The core assumption for utilizing this approach as explained by Creswell (2012) is that using both quantitative and qualitative methods provides a better understanding of the problem than either method by itself. It then described the setting of the study, the participants and their selection criteria, the instrumentation, and data collection procedures. Furthermore, the reliability and validity of the methods, instruments and techniques utilized for the data collection and data analysis were given in detail. The research findings are explained in detail in the next three chapters.

CHAPTER 5

STUDENTS' QUANTITATIVE RESULTS AND DISCUSSION

5.1 Introduction

This chapter reports the findings of data analysed quantitatively. It builds on the previous chapter which detailed the methods and instruments used in the study. Specifically it reports the quantitative results of the study collected through the use of online surveys, namely, McKenzie's Multiple Intelligences (MI) Inventory and the researcher-made questionnaire. The quantitative section of the chapter is structurally partitioned into three phases. The first phase focuses on the descriptive analysis of the data collected from the respondents of the MI inventory (*N*=236). The findings of the researcher-made questionnaire (*N*=171) are then reported. The third phase focuses on the results of the respondents completing both questionnaires (*N*=111).

5.2 Demographic Background of the Respondents of the McKenzie's MI Inventory

This section presents the descriptive and quantitative data of the MI inventory respondents. The demographic background of the respondents is summarized in Table 5-1. The frequency distribution reports on the students' gender, age, subject and status of enrolment, year of study, and delivery mode of the subject they are enrolled in.

From the data shown in Table 5.1, 62 males (26.3%) and 174 females (73.7%) formed the sample of the MI study, giving a total of 236 respondents. As the age of students was from 17 to 58, it was decided to categorize the age of respondents on the basis of the developmental eras introduced in Levinson's theory (Peterson, 2014, p. 478) (See Appendix E). According to the theory guidelines, developmental eras are divided into four categories named: pre-

adulthood (aged 0-23), early-adulthood (aged 24-45), middle –adulthood (aged 45-65), and Late-adulthood (aged 66 and above). However, given the age range of 17 to 58 for this study, the researcher used only three (out of 4) categories and divided students' age on that basis. Accordingly, the respondents are 143 pre-adulthood (60.6%), 82 early-adulthood (34.7%) and 11 middle-adulthood (4.7%). The respondents were from different years of study as 178 of them were in the first year, 28 in second year, 20 in third year and 10 respondents were in the final year and they were either enrolled as part time or full time (37 part time, 199 full time) in different subjects from Education or Psychology. The majority of respondents, 219 (92.8%), were studying 'face-to-face, on campus' and 10 (4.2%) of them were studying in 'Distance mode with some face-to-face on campus component' and only 7 (3.0%) of them were studying in 'Solely online off campus' mode of delivery.

Table 5-1: Frequency Distribution of Students' Gender, Age, Enrolment Status, Subject, Year of Study, and Delivery mode (*N*=236)

	Frequency	Percent
Gender		
Males	62	26.3
Females	174	73.7
Age		
Pre-adulthood 0-23	143	60.6
Early-adulthood 24-45	82	34.7
Middle-adulthood 45-65	11	4.7
Enrolment Status		
Part time	37	15.7
Full time	199	84.3
Year of Study		
1st Year	178	75.4
2nd Year	28	11.9
3rd Year	20	8.5
Final Year	10	4.2
Delivery Mode		
face-to-face, on campus (f-t-f)	219	92.8
Solely online off campus	7	3.0
Distance with some f-t-f on campus component	10	4.2
Subject		
ES3001	17	7.2
ES1000	2	.8
ES1001	2	.8
ES4007	1	.4
BS1481	100	42.4
BS1482	88	37.3
BS2483	23	9.7
BS3487	3	1.3

For the majority of students (n=163, 69.1%) their current enrollment was their first tertiary study. It was also revealed from the data that 30.9% (73 out of 236) of the student respondents have previously obtained another tertiary degree.

5.2.1 MI Inventory

In assessing respondents' MI profile, the raw scores of the questionnaire were subjected to descriptive analysis and the results are shown in Table 5-2. Based on the results indicated in Table 5-2, the students are higher on Intrapersonal intelligence (*M*=39.84) and lower in Existential intelligence (*M*=31.23). Two other intelligences which seem to be most highly developed in the students are Bodily-Kinesthetic (*M*=39.18) and Verbal-Linguistic (*M*=36.69) intelligences.

Table 5-2: Descriptive Statistics of the MI profiles of Students (*N*=236)

Intelligences	**Minimum**	**Maximum**	**Mean**	***S.D.***
Intrapersonal	10.00	50.00	39.84	4.51
Bodily-Kinesthetic	10.00	50.00	39.18	4.07
Verbal-Linguistic	10.00	50.00	36.69	4.66
Musical-Rhythmic	10.00	45.00	36.43	4.04
Interpersonal	10.00	45.00	35.97	4.10
Naturalist	10.00	48.00	35.52	4.48
Logical-Mathematical	10.00	50.00	35.37	4.48
Visual	10.00	45.00	34.22	4.48
Existential	10.00	43.00	31.23	4.35

The MI profiles of respondents were also scrutinized by age categories. For this reason, the raw scores were subjected to descriptive analysis and the results are shown in Table 5-3. Based on the results indicated in Table 5-3, the students in the pre-adulthood category (***N***=143) are higher on Intrapersonal intelligence (*M*=39.92) and lower in Existential intelligence (*M*=31.03). Early-adulthood respondents (***N***=82) are higher on Bodily-Kinesthetic intelligence (*M*=39.93) and lower in Existential intelligence (*M*=31.35). Respondents in the middle-adulthood category (***N***=11), are higher on Bodily-Kinesthetic intelligence (*M*=39.91) and lower in Existential intelligence (*M*=32.91).

Table 5-3: Descriptive Statistics of the MI subscales based on the Age Category

Intelligence	Minimum	Maximum	Mean	*SD*
Intrapersonal	10.00	50.00	39.92	5.02
Bodily-Kinesthetic	10.00	50.00	38.70	4.45
Verbal-Linguistic	10.00	50.00	36.09	4.98
Musical-Rhythmic	10.00	45.00	35.72	4.30
Naturalist	10.00	48.00	35.42	4.59
Interpersonal	10.00	45.00	35.29	4.26
Logical-Mathematical	10.00	50.00	35.11	4.73
Visual	10.00	43.00	33.21	4.44
Existential	10.00	43.00	31.03	4.45

a. Age category = Pre-adulthood, ***N***=143

Intelligence	Minimum	Maximum	Mean	*SD*
Bodily-Kinesthetic	31.00	48.00	39.93	3.45
Intrapersonal	32.00	47.00	39.73	3.78
Verbal-Linguistic	26.00	48.00	37.62	4.14
Musical-Rhythmic	30.00	45.00	37.46	3.40
Interpersonal	27.00	45.00	37.00	3.74
Logical-Mathematical	26.00	46.00	35.83	4.14
Naturalist	25.00	47.00	35.69	4.40
Visual	24.00	45.00	35.60	4.28
Existential	21.00	41.00	31.35	4.22

a. Age category = Early-adulthood, ***N***= 82

Intelligence	Minimum	Maximum	Mean	*SD*
Bodily-Kinesthetic	37.00	44.00	39.91	1.92
Intrapersonal	37.00	44.00	39.64	2.11
Musical-Rhythmic	34.00	44.00	37.91	3.14
Verbal-Linguistic	35.00	41.00	37.55	2.25
Visual	34.00	41.00	37.09	1.97
Interpersonal	30.00	40.00	37.09	2.77
Naturalist	28.00	43.00	35.54	3.91
Logical-Mathematical	28.00	42.00	35.27	3.69
Existential	24.00	39.00	32.91	4.01

a Age category = Middle-adulthood, ***N***= 11

According to the findings presented in Table 5-3, it can be revealed that respondents in both early-adulthood and middle-adulthood age categories share similar lower and higher intelligences. These are Existential and Bodily-Kinesthetic intelligences. Regardless of their age category, all groups are lower in Existential intelligence.

5.2.1.1 Exploratory Data Analysis (EDA)

Prior to the application of any inferential analysis, the dependent variables were screened for the normality assumption. The data gathered from the MI inventory as well as the online researcher-made questionnaire were subjected to normality distribution to identify the most suitable statistical application for the study. Pallant (2011) and Coakes (2013) call the Exploratory Data Analysis (EDA) as an exploration of general assumptions' fulfilment prior to inferential analysis and to determine whether the EDA satisfies the required assumptions for parametric tests. It is one of the most common EDA and prerequisite explorations reported. The accuracy of data entry, missing data, and outliers were initially checked following the criteria suggested by Tabachnick and Fidell (2013). Descriptive statistics of all the variables were examined using SPSS normality. An examination of the values indicated no values out-of-range. There was no missing data in this study as the researcher was aware of this issue during the set-up of the online survey. Any possible missing data was avoided by incorporating the use of more options during setup on SurveyMonkey®, such as using an asterisk (i.e., respondent must answer to move to the next item). Examination of the standardized residual plots in identifying potential outliers showed no cases above +3 or less than-3 as suggested by Tabachnick and Fidell (2013). Thus, no extreme scores were detected in the dependent variables in this study.

5.2.1.2 Normality Test

To accomplish the assumption for tests used in parametric or nonparametric statistical techniques, questionnaires were subjected to normality distribution. Normality can be assessed to some extent by obtaining one of the following techniques: Skewness and Kurtosis value, Kolmogorov-Smirnov and Shapiro-Wilk statistics. In this case, to test whether the data of the MI inventory are normally distributed, the Kolmogorov-Smirnov' test was used. This test was

utilized as any violation to the assumption could be easily recognized. The Shapiro-Wilk statistic will be calculated if the sample size is less than one hundred (Coakes, 2013, p. 43). According to Coakes (2013) and Pallant (2011), if the observed significance level is more than the alpha value of .05, the normality is assumed and the null hypothesis which states that the samples are from normally distributed populations is not rejected. In other words, if the *p* value is larger than .05, the test is non-significant as it shows the distribution of the sample is not significantly different from a normal distribution and is probably normal. If, the *p* value is smaller than .05, the test is significant as it reveals the distribution is significantly different from a normal distribution and is non-normal (Field, 2011). However, as indicated in Table 5-4, the observed significance level (*p* value) for the MI subscales are smaller than the alpha level of .05 (*p*= .000) suggesting violation of the assumption of normality which is quite common in larger samples. The reality of the MI subscales' normality violation was not surprising since the data was collected from university students who already have demonstrated a level of intelligence. Likewise, the abilities of the students influence the test distribution.

Table 5-4: Tests of Normality for MI Sub-scales

Independent Variables	Kolmogorov-Smirnov[a]		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Naturalist	.10	.000	.95	.000
Musical-Rhythmic	.08	.000	.93	.000
Logical-Mathematical	.08	.001	.94	.000
Existential	.08	.000	.97	.000
Interpersonal	.09	.000	.93	.000
Bodily-Kinesthetic	.13	.000	.89	.000
Verbal-Linguistic	.09	.000	.95	.000
Intrapersonal	.08	.001	.92	.000
Visual	.07	.006	.96	.000

a. Lilliefors Significance Correction[1]
df: 236

[1] Lilliefors Significance Correction (generally referred to as the *Lilliefors test for normality* or KS Lilliefors test for normality) is a normality test based on the Kolmogorov–Smirnov test which was developed by Lilliefors and Van Soest and adjusts for the fact that the researcher is estimating population parameters (mean and variance or standard deviation) rather than having known values. (Abdi & Molin, 2007)

Based on the result of the test revealing violations of the distribution assumptions of parametric tests, alternative nonparametric techniques are recommended. As addressed by George and Mallery (2014), nonparametric techniques deal "primarily with populations that are not normally distributed and consider how to conduct statistical tests if the assumption of normality is violated" (p. 228). Similarly, Pallant (2011) states that non-parametric techniques are useful when the data do not meet the assumptions of the parametric techniques.

5.2.1.3 Reliability Tests

The reliability of a measuring instrument as defined by Ary et al. (2014), is "the degree of consistency with which it measures whatever it is measuring" (p. 253). The reliability test addresses whether the instrument produces the same results each time it is administered. There are different reliability coefficient measures (i.e., Cronbach's alpha, split-half reliability, Guttman, parallel, strictly parallel) but Cronbach's alpha (also referred to as coefficient alpha) is the most commonly used. Cronbach's alpha is based on "the average correlation of items within a test if the items are standardized. If the items are not standardized, it is based on the average covariance among the items" (Coakes, 2013, p. 124). Thus, it can be interpreted as a correlation coefficient that ranges in a value from 0 to 1.

Using SPSS version 22, the overall reliability coefficient of the MI inventory and researcher-made questionnaire was found to be $r = 0.91$ and $r = 0.88$ indicating the large magnitude of reliability coefficient (r) of the instruments used in the study as well as the homogeneity of the items within the scales. According to the guidelines regarding acceptable reliabilities for research instrument scales provided by George and Mallery (2014, p. 251) (see Table 5.5), this reliability is considered "excellent" for the MI inventory and "good" for the researcher-made

questionnaire. MI subscale reliabilities, however, ranged from 0.75 to 0.76, as shown in Table 5.6.

Table 5-5: Guidelines provided by George and Mallery (2014, p. 251)

Alpha	Indicator
.9 – 1.0	Excellent
.8 – .9	Good
.7 – .8	Acceptable
.6 – .7	Questionable
.5 – .6	Weak
< .5	Unacceptable

The current reliability estimates of the subscales can be considered encouraging, especially since the overall reliability of the instrument is 0.91 which defines the instrument to be an "excellent" one.

Table 5-6: Cronbach alpha for MI sub-scales

Intelligence	Cronbach Alpha
Naturalist	.76
Musical-Rhythmic	.76
Logical-Mathematical	.75
Existential	.76
Interpersonal	.76
Bodily-Kinesthetic	.76
Verbal-Linguistic	.75
Intrapersonal	.76
Visual	.76
Overall MI	**.91**

5.2.1.4 Mann-Whitney U test for MI subscales and Gender

To find out whether there is a significant difference between the two genders in terms of their intelligences, Mann-Whitney U tests were used for the data and compared against two-tailed *p* values. The Mann-Whitney U test is a non-parametric alternative to the t-test used to test for differences between two independent groups on a continuous measure. According to Pallant (2011), this test is used to compare mean ranks for the two groups instead of means of the

groups as considered in a t-test. Coakes (2013) asserts that the Mann-Whitney U test "tests the hypothesis that two independent samples come from populations having the same distribution. This test is equivalent to the independent groups t-test" (p. 171). The rationale for using this test, rather than its traditional parametric counterpart (*t*-test) is based on *U* test being distribution free because no prior assumptions about the distribution of the data were available with respect to the perceptions of individual intelligences. The data presented in Table 5.7 show that only the *p* value for bodily-kinesthetic and Verbal-Linguistic and Intrapersonal intelligences are less than the required cut-off of .05 ($p<0.05$).

Table 5-7: Mann-Whitney U test for MI and Gender

Intelligences	**Gender**	**Mean Rank**	***z***	***p* (2-tailed)**
Naturalist	Male	117.25	-0.17	0.87
	Female	118.95		
Musical-Rhythmic	Male	109.09	-1.27	0.20
	Female	121.85		
Logical-Mathematical	Male	106.13	-1.67	0.10
	Female	122.91		
Existential	Male	107.50	-1.48	0.14
	Female	122.42		
Interpersonal	Male	129.24	-1.45	0.15
	Female	114.67		
Bodily-Kinesthetic	Male	104.11	-1.94	**0.05**
	Female	123.63		
Verbal-Linguistic	Male	102.67	-2.13	**0.03**
	Female	124.14		
Intrapersonal	Male	91.08	-3.69	0.00
	Female	128.27		
Visual	Male	118.76	-0.03	0.97
	Female	118.41		

Note: $N_{\text{Males}}=62$, $N_{\text{Females}}=174$

5.2.1.5 Kruskal-Wallis Tests

This section provides the respondents' Kruskal-Wallis test results for their age categories, and subject delivery mode, in terms of their intelligences that is elaborated separately in the following.

5.2.1.5.1 Kruskal-Wallis Tests for MI subscales and the different Age categories

To find out whether there is a significant difference between the three age categories in terms of their intelligences, a Kruskal-Wallis test was used and the data for *p* values (two-tailed), were considered. The Kruskal-Wallis test is a non-parametric test alternative to a one-way between groups analysis of variance (ANOVA) and is sometimes called the analysis of variance by ranks (Coakes, 2013; Pallant, 2011). The test is similar in nature to the Mann-Whitney U Test, but it allows comparison of the scores on some continuous variable for more than just two groups (three or more). Accordingly, Kruskal-Wallis test converts scores to ranks and compares the mean rank for each group (Pallant, 2011). The Kruskal-Wallis Test data presented in Table 5.8 shows that only the *p* value for Musical-Rhythmic, Interpersonal, Bodily-Kinesthetic, Verbal-Linguistic, and Visual-Spatial intelligences are less than the required cut-off of .05 ($p<0.05$) [(GP1, n=143: pre-adulthood, GP2, n=82: early-adulthood, GP3, n=11: middle-adulthood), χ^2 (2, n=236)= 10.63, p=.005; χ^2 (2, n=236)= 11.30, p=.004; χ^2 (2, n=236)= 6.93, p=.031; χ^2 (2, n=236)= 6.33, p=.042].

Table 5-8: Kruskal-Wallis Tests for MI subscales and the different Age categories

Intelligences	**Age**	**Mean Rank**	Chi-Square	***p* (2-tailed)**
Naturalist	Pre-adulthood	117.91	0.03	.983
	Early-adulthood	119.63		
	Middle-adulthood	117.77		
Musical-Rhythmic	Pre-adulthood	106.92	10.63	**.005**
	Early-adulthood	135.45		
	Middle-adulthood	142.68		
Logical-Mathematical	Pre-adulthood	114.19	1.55	.461
	Early-adulthood	125.92		
	Middle-adulthood	119.23		
Existential	Pre-adulthood	115.02	2.79	.248
	Early-adulthood	120.34		
	Middle-adulthood	149.95		
Interpersonal	Pre-adulthood	106.58	11.30	**.004**
	Early-adulthood	135.83		
	Middle-adulthood	144.27		
Bodily-Kinesthetic	Pre-adulthood	109.13	6.93	**.031**
	Early-adulthood	133.30		

	Middle-adulthood	129.95		
Verbal-Linguistic	Pre-adulthood	109.52	6.33	**.042**
	Early-adulthood	132.10		
	Middle-adulthood	133.86		
Intrapersonal	Pre-adulthood	120.93	0.48	.788
	Early-adulthood	115.08		
	Middle-adulthood	112.41		
Visual-Spatial	Pre-adulthood	102.13	22.87	**.000**
	Early-adulthood	140.12		
	Middle-adulthood	170.18		

Note: $N_{\text{Pre-adulthood}}$ =143, $N_{\text{Early-adulthood}}$ =82, $N_{\text{Middle-adulthood}}$= 11, N_{total}= 236
Note: df= 2

A statistically significant result for a Kruskal-Wallis Test does not show which of the groups are statistically significantly different from each other. To find this out, some follow-up Mann-Whitney U tests between pairs of groups are recommended (Allen & Bennett, 2010; Pallant, 2011; Tabachnick & Fidell, 2013). To control for Type 1 errors, a Bonferroni adjustment to the alpha values is necessary. Type 1 error comprises "rejecting the null hypothesis (e.g. there are no differences among the groups) when it is actually true" (Pallant, 2011, pp. 208-209). According to Pallant, the Bonferroni adjustment involves dividing the alpha level (e.g., .05) by the number of tests that will be used to determine whether differences are significant. For each of the group comparisons, an effect size statistic can also be calculated. Here, this would mean a stricter alpha level of .05/3=0.017. As such, further analyses used the Bonferroni's adjustment of 0.017. Given the three comparisons required for each of the significant subscale results from the Kruskal-Wallis Test (see Table 5-9), there were differences between pre-adulthood and early-adulthood for Musical-rhythmic, Interpersonal, Bodily-kinesthetic, and Visual intelligences. Also differences could be seen between pre-adulthood and middle adulthood for their Visual intelligence.

Table 5-9: Mann-Whitney U test for MI and Age

Intelligences	Age	Mean Rank	*z*	*p* (2-tailed)	Age	Mean Rank	*z*	*p* (2-tailed)	Age	Mean Rank	*z*	*p* (2-tailed)
Musical-Rhythmic	Pre-adulthood	103.07	-3.034	**0.002**	Early-adulthood	46.63	-.365	0.715	Pre-adulthood	75.85	-1.659	0.097
	Early-adulthood	130.32			Middle-adulthood	49.77			Middle-adulthood	98.91		
Interpersonal	Pre-adulthood	102.97	-3.064	**0.002**	Early-adulthood	46.84	-.161	0.872	Pre-adulthood	75.61	-1.903	0.057
	Early-adulthood	130.49			Middle-adulthood	48.23			Middle-adulthood	102.05		
Bodily-Kinesthetic	Pre-adulthood	104.79	-2.511	**0.012**	Early-adulthood	47.48	-.473	0.636	Pre-adulthood	76.34	-1.167	0.243
	Early-adulthood	127.32			Middle-adulthood	43.41			Middle-adulthood	92.55		
Verbal-Linguistic	Pre-adulthood	105.23	-2.373	0.018	Early-adulthood	47.04	-.042	0.967	Pre-adulthood	76.29	-1.215	0.224
	Early-adulthood	126.55			Middle-adulthood	46.68			Middle-adulthood	93.18		
Visual	Pre-adulthood	99.96	-3.979	**0.000**	Early-adulthood	45.88	-1.099	0.272	Pre-adulthood	74.17	-3.353	**0.001**
	Early-adulthood	135.74			Middle-adulthood	55.36			Middle-adulthood	120.82		

Note: $N_{\text{Pre-adulthood}}$ =143, $N_{\text{Early-adulthood}}$ =82, $N_{\text{Middle-adulthood}}$= 11, N_{total}= 236

To find out the relative magnitude of the differences, the effect size was calculated according to the following formula. As SPSS does not provide an effect size statistic, the value of z can be used to calculate an approximate value of the effect size (r).

$$r = \frac{z}{\text{Square root of } N \ (N = \text{total number of cases})}$$

Replacing the formula with the appropriate values (see Table 5.10), effect sizes for the significant comparisons presented in Table 5-9 were calculated and presented below.

Table 5-10: Effect size of the Significant MI subscales based on the Age Category

Intelligences	**Age**	***z***	***r***
Musical-Rhythmic	Pre-adulthood Early-adulthood	-3.034	**-0.20**
Interpersonal	Pre-adulthood Early-adulthood	-3.064	**-0.20**
Bodily-Kinesthetic	Pre-adulthood Early-adulthood	-2.511	**-0.17**
Visual	Pre-adulthood Early-adulthood	-3.979	**-0.26**
	Pre-adulthood Middle-adulthood	-3.353	**-0.27**

Note: $N_{\text{Pre-adulthood}} = 143$, $N_{\text{Early-adulthood}} = 82$, $N_{\text{Middle-adulthood}} = 11$

Interpreting the effect size value based on the guidelines proposed by Cohen (1988; Pallant, 2011, p. 210) (Table 5.11), the magnitude of the differences in the means were small.

Table 5-11: Guidelines provided by Cohen (1988; Pallant, 2011, p. 230)

Effect Size	**Size**
0.1	Small effect
0.3	Moderate effect
0.5	Large effect

5.2.1.5.2 Kruskal-Wallis Test for MI subscales and the Subject delivery mode

To find out whether there is a significant difference between the subject delivery modes in terms of the students' intelligences, a Kruskal-Wallis test was used and the data for *p* values (two-tailed), were considered. The data presented in Table 5.12 reveals that only the *p* value for Existential intelligence is less than the required cut-off of .05 ($p<0.05$) [(GP1, n=219: Face to face, on campus, GP2, n=7: Solely online off campus, GP3, n=10: Distance with some F-t-F component), χ^2 (2, n=236)= 6.77, p=**.034**.

Table 5-12: Kruskal-Wallis Test for MI subscales and the Subject delivery mode

Intelligences	Delivery Mode	Mean Rank	Chi-Square	*p* (2-tailed)
Naturalist	Face to face, on campus	118.02	3.17	0.205
	Solely online off campus	158.93		
	Distance with some F-t-F component	100.70		
Musical-Rhythmic	Face to face, on campus	118.93	1.75	0.417
	Solely online off campus	138.07		
	Distance with some F-t-F component	95.35		
Logical-Mathematical	Face to face, on campus	117.53	0.95	0.621
	Solely online off campus	142.43		
	Distance with some F-t-F component	122.90		
Existential	Face to face, on campus	118.33	6.77	**0.034**
	Solely online off campus	171.93		
	Distance with some F-t-F component	84.80		
Interpersonal	Face to face, on campus	116.76	3.30	0.192
	Solely online off campus	163.50		
	Distance with some F-t-F component	125.05		
Bodily-Kinesthetic	Face to face, on campus	117.62	0.68	0.711
	Solely online off campus	138.00		
	Distance with some F-t-F component	124.10		
Verbal-Linguistic	Face to face, on campus	116.42	3.60	0.165
	Solely online off campus	162.50		
	Distance with some F-t-F component	133.20		
Intrapersonal	Face to face, on campus	119.19	.423	0.809
	Solely online off campus	103.00		
	Distance with some F-t-F component	114.30		
Visual	Face to face, on campus	117.26	5.15	.076
	Solely online off campus	174.64		
	Distance with some F-t-F component	106.45		

Note: N_{FtF} =219, $N_{Solely\ Online}$ =7, $N_{Distance\ with\ some\ FtF}$= 10, N_{total}= 236 **Note:** df= 2

Using a Mann-Whitney U test, a significant difference was revealed between students in ‘face-to-face, on campus’ mode of delivery (*Mdn* = 31, *n* = 219) and those in ‘Solely online off campus’ mode (*Mdn* = 34, *n* =7) *U* = 418, *z* = -2.054, *p* = .040, *r* =-0.13. There was also a significant difference between those in ‘Solely online off campus’ (*Mdn* = 34, *n* = 7) and students in ‘Distance with some face-to-face component’ mode (*Mdn* = 30, *n* = 10) *U* =9.5, *z* = -2.512, *p*= .012, *r* = -0.16. The effect sizes for these differences were small.

Table 5-13: Mann-Whitney U test for MI and Subject delivery mode and its relevant Effect Size

Intelligences	Delivery Mode	Mean Rank	*z*	*p* (2-tailed)	Delivery Mode	Mean Rank	*z*	*p* (2-tailed) (r)	Delivery Mode	Mean Rank	*z*	*p* (2-tailed)
Existential	F-t-F, on campus	111.91	-2.054	0.040	Solely online off campus	12.64	-2.512	**0.012** (-0.16)	F-t-F, on campus	116.42	-1.526	0.127
	Solely online off campus	163.29			Distance with some F-t-F component	6.45			Distance with some F-t-F component	83.85		

Note: $N_{\text{F-t-F}}$ =219, $N_{\text{Solely Online}}$ =7, $N_{\text{Distance with some F-t-F}}$= 10, N_{total}= 236

5.2.2 Factor Analysis

This section presents the results of factor analysis. Factor analysis is "a data reduction technique used to reduce a large number of variables to a smaller set of underlying factors that summarize the essential information contained in the variables" (Coakes, 2013, p. 128). According to Pallant (2011), two main points should be considered before running factor analysis in order to determine the suitability of the data set. These two points are 'sample size' and 'strength of inter-correlations' among items. While there is little agreement among researchers and authors about the sample size, Coakes (2013) recommends a minimum sample size of five subjects per variable for factor analysis. He states that "a sample of 100 subjects is acceptable but sample size of 200+ are preferable" (p. 129). Some authors (e.g., Nunnally, 1978; cited in Pallant, 2011; Tabachnick & Fidell, 2013) reviewed this issue and suggest that the ratio of participants to items is a more important consideration than the overall sample size. For instance, Nunnally suggests a 10 to 1 ratio which means ten cases for each item to be factor analysed. Tabachnick and Fidell (2013) suggest a ratio of five to 1 considering that acceptable in most cases. As the number of items in the researcher-made questionnaire were 17, a minimum of 85 respondents was required for running the factor analysis. The number of respondents to the questionnaire was 171 which is far beyond the required minimum sample size and thus adequate for the factor analysis.

Another point that should be considered before analysing the data is 'the strength of the intercorrelations among the items'. For this reason, two SPSS statistical measures of Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy assess the factorability of the data (Pallant, 2011). According to Tabachnick and Fidell (2013) and Pallant (2011)., if the observed significance level of the Bartlett's test of sphericity is less than the alpha value of .05 ($p < .05$), it is appropriate for the factor analysis. They also mark the

KMO index which ranges from 0 to 1, with .6 suggested as the minimum value for an acceptable factor analysis.

According to the analyses' output, the Bartlett's test of sphericity is statistically significant as the *p* value (*p*=.000) is less than the alpha value of .05 ($p < .05$). On the other hand, the Kaiser-Meyer-Olkin value is **.92**, exceeding the recommended value of .6 by Tabachnick and Fidell (2013) and Pallant (2011). Therefore, the data set is considered appropriate to support the factorability of the correlation matrix.

As the next step, the 17 items of the researcher-made questionnaire were subjected to Principal Component Analysis (PCA) using SPSS version 22 to inspect the factorability of the components and determining the number of components. Indeed, the term 'factor analysis' involves a variety of different but related techniques such as principal components analysis (PCA) and factor analysis (FA). These sets of techniques are similar in many ways and are often used interchangeably. However, in this study principal components analysis was used for several reasons. It is a 'psychometrically sound procedure', 'simpler mathematically than factor analysis', and it avoids 'some of the common issues with 'factor indeterminacy' associated with factor analysis' (Stevens, 2009, p. 325). Furthermore, Tabachnick and Fidell (2013) conclude that "If you are interested in a theoretical solution uncontaminated by unique and error variability… FA is your choice. If, on the other hand, you simply want an empirical summary of the data set, PCA is the better choice" (p. 640).

The results of the PCA revealed the presence of two components with Eigenvalues exceeding 1, explaining **45.12** and **8.83** of the variance respectively. An inspection of the screeplot revealed a clear break after the second component. Using Catell's (1966) scree test, it was

decided to retain two components for further investigation. This was further supported by the results of components for further investigation. In addition, the results of Parallel Analysis showed only two components with Eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (17 variables×171 respondents). The two-component solution explained a total of **53.96** of the variance, with Component 1 contributing **29.17** and Component 2 contributing **24.79.**

In addition, the 17 items of the researcher-made questionnaire were subjected to Varimax Rotated Principal Component Factor Analysis to determine the components that account for the highest degree of variance as Factor analysis can mark the components that can be grouped together. The grouping items are presented in the following table (Table 5.14). It should be noted that Varimax rotation is most frequently used in factor analysis as it "reduces the number of complex variables and improves interpretation" (Coakes, 2013, p. 136). As shown in the table, the 17 items have been divided into two distinct components labeled as 'motivation' and 'learning experience'. The factor loadings range in the first group is between .820 and .604 and in the second group between -.317 to .356.

Table 5-14: Varimax Rotated Principal Component Factor Analysis Results for the Researcher-made Questionnaire (*N*= 171)

Researcher-made Questionnaire items	Component		h^2
	Motivation	Learning Experience	
The use of online videos enriched the subject materials.	0.82	-0.08	0.68
The use of online videos in the subject enriched my learning experiences in this class.	0.80	-0.24	0.71
I would recommend video-assisted subjects to anyone taking this subject.	0.80	0.26	0.70
Online videos used in the subject contributed to my learning.	0.77	-0.05	0.59
Online videos provided me with valuable resources for this subject.	0.77	-0.27	0.66
I was able to learn effectively because of the mix of videos used in this subject.	0.74	-0.31	0.65
Using online videos helped me to reflect on what I was learning.	0.73	0.00	0.53
The use of online videos in the subject helped me understand the material better.	0.68	-0.33	0.58
Online videos are an asset to this subject.	0.65	0.36	0.55
Online videos helped me do better on assignments/exams.	0.65	0.41	0.59
The lecturer's links to online videos were valuable to my learning in this subject.	0.64	0.27	0.48
The use of online videos in the subject stimulated my interest in class sessions.	0.64	-0.50	0.65
My reviews of online videos improved my performance in the subject.	0.61	0.33	0.48
Online videos were a waste of time.	0.60	0.19	0.40
Online videos made the class feel more interactive.	0.54	-0.32	0.39
I wish the instructor had used more online videos.	0.41	0.31	0.27
I prefer learning through videos more than through an in-class lecture.	0.36	0.36	0.25
Total Variation	**29.17**	**24.79**	**53.96**

5.3 Demographic Background McKenzie's MI inventory Respondents completed both Surveys

As reported earlier in Chapter 4 (Section 4.4.2.2.1), the total number of respondents completing both surveys considered appropriate for this study were 111 as some of them had changed their

residential address and therefore it was not possible to match their data. To this end, it was decided to work on the clearly matched data and their demographic information is summarized in Table 5-15. The variables reported include their gender, age, subject and status of enrolment of the respondents, year of study and delivery mode of the subject. Based on the data presented in Table 5-15, 32 males (28.8%) and 79 females (71.2%) formed the sample of the study, giving a total of 111 respondents. The respondents are 74 pre-adulthood (66.7%), 33 early-adulthood (29.7%) and 4 middle-adulthood (3.6%). The respondents were from different years of study as 91 of them were in the first year, 13 in second year, 6 in third year and 1 respondent was in the final year and they were enrolled as part time and full time (12 part time, 99 full time) in Psychology subjects. Majority of respondents, 109 (98.2%), were studying 'face-to-face, on campus' and only 2 (1.8%) of them were studying in 'Distance with some face-to-face on campus component' mode of delivery.

Table 5-15: Frequency Distribution of Students' Gender, Age, Enrolment Status, Subject, Year of Study (*N*=111)

	Frequency	**Percent**
Gender		
Males	32	28.8
Females	79	71.2
Age		
Pre-adulthood 0-23	74	66.7
Early-adulthood 24-45	33	29.7
Middle-adulthood 45-65	4	3.6
Enrolment Status		
Part time	12	10.8
Full time	99	89.2
Year of Study		
1st Year	91	82.0
2nd Year	13	11.7
3rd Year	6	5.4
Final Year	1	.9
Delivery Mode		
face to face, on campus (f-t-f)	109	98.2
Distance with some f-t-f on campus component	2	1.8

Subject		
BS1481	55	49.5
BS1482	42	37.8
BS2483	14	12.6

For the majority of students (n=81, 73.0%) their current enrollment was their first tertiary study. It was also revealed that 27.0% (30 out of 111) of the student respondents have previously obtained another tertiary degree.

Assessing respondents' MI profile, it was revealed that students are higher on Intrapersonal intelligence (*M*=39.59) and lower in Existential intelligence (*M*=30.91) (see Table 5-16). Bodily-Kinesthetic (*M*=38.51) and Musical-Rhythmic (*M*=36.29) intelligences were other highly developed intelligences of students.

Table 5-16: Descriptive Statistics of the MI profiles of Students (*N*=111)

Intelligences	**Minimum**	**Maximum**	**Mean**	***S.D.***
Intrapersonal	25.00	50.00	39.59	4.43
Bodily-Kinesthetic	25.00	47.00	38.51	3.75
Musical-Rhythmic	26.00	45.00	36.29	3.79
Verbal-Linguistic	26.00	48.00	36.24	4.26
Naturalist	22.00	45.00	35.46	4.09
Interpersonal	25.00	45.00	35.39	3.56
Logical-Mathematical	16.00	45.00	34.71	3.99
Visual	22.00	45.00	33.85	4.21
Existential	21.00	42.00	30.91	3.95

To find out the MI profiles of respondents based on the age category, the raw scores were subjected to descriptive analysis and the results are shown in Table 5-17. As indicated in Table 5-17, the students in pre-adulthood category (***N***=74) are higher on Intrapersonal intelligence (*M*=39.72) and lower in Existential intelligence (*M*=30.86). Early-adulthood respondents (***N***=33) are higher on Bodily-Kinesthetic intelligence (*M*=39.64) and lower in Existential

intelligence (*M*=30.91). The middle-adulthood respondents (***N***=4), are higher on Intrapersonal intelligence (*M*=40.50) and lower in Existential intelligence (*M*=31.75).

Table 5-17: Descriptive Statistics of the MI subscales based on the Age Category

Intelligence	**Minimum**	**Maximum**	**Mean**	***SD***
Intrapersonal	25.00	50.00	39.72	4.82
Bodily-Kinesthetic	25.00	46.00	37.90	3.80
Verbal-Linguistic	26.00	48.00	35.61	4.28
Naturalist	22.00	45.00	35.53	4.02
Musical-Rhythmic	26.00	45.00	35.34	3.69
Interpersonal	25.00	45.00	35.01	3.60
Logical-Mathematical	16.00	45.00	34.66	4.19
Visual	22.00	43.00	33.13	4.15
Existential	22.00	42.00	30.86	4.10

a. Age category = Pre-adulthood, ***N***=74

Intelligence	**Minimum**	**Maximum**	**Mean**	***SD***
Bodily-Kinesthetic	31.00	47.00	39.64	3.51
Intrapersonal	32.00	47.00	39.18	3.68
Musical-Rhythmic	30.00	44.00	37.94	3.22
Verbal-Linguistic	26.00	46.00	37.45	4.16
Interpersonal	28.00	43.00	36.12	3.37
Naturalist	29.00	43.00	35.27	4.12
Visual	26.00	45.00	34.97	4.06
Logical-Mathematical	26.00	43.00	34.64	3.48
Existential	21.00	38.00	30.91	3.56

a. Age category = Early-adulthood, ***N***= 33

Intelligence	**Minimum**	**Maximum**	**Mean**	***SD***
Intrapersonal	38.00	44.00	40.50	2.52
Bodily-Kinesthetic	38.00	44.00	40.50	2.52
Musical-Rhythmic	37.00	44.00	40.25	3.30
Visual	36.00	41.00	38.00	2.45
Verbal-Linguistic	36.00	41.00	38.00	2.16
Interpersonal	30.00	39.00	36.25	4.19
Logical-Mathematical	30.00	42.00	36.25	4.92
Naturalist	28.00	43.00	35.75	6.18
Existential	24.00	36.00	31.75	5.31

a Age category = Middle-adulthood, ***N***= 4

5.3.1 Mann-Whitney U test for MI subscales and Gender

To find out whether there is a significant difference between the two genders in terms of their intelligences, Mann-Whitney U tests were used for the data and compared against two-tailed *p* values. The data presented in Table 5.18 shows that only the *p* value for Logical-Mathematical and Intrapersonal intelligences are less than the required cut-off of .05 ($p<0.05$).

Table 5-18: Mann-Whitney U test for MI subscales and Gender

Intelligences	Gender	Mean Rank	*z*	*p* (2-tailed)
Naturalist	male	57.86	-0.39	0.70
	female	55.25		
Musical-Rhythmic	male	51.81	-0.88	0.38
	female	57.70		
Logical-Mathematical	male	46.72	-1.94	**0.05**
	female	59.76		
Existential	male	50.33	-1.19	0.24
	female	58.30		
Interpersonal	male	58.78	-0.58	0.56
	female	54.87		
Bodily-Kinesthetic	male	47.06	-1.87	0.06
	female	59.62		
Verbal-Linguistic	male	51.00	-1.05	0.30
	female	58.03		
Intrapersonal	male	37.38	-3.89	**0.00**
	female	63.54		
Visual	male	57.20	-0.25	0.80
	female	55.51		

Note: $N_{\text{Males}}=32$, $N_{\text{Females}}=79$

In addition, the researcher conducted another Mann-Whitney U test to see if there is a significant difference between the two modes of delivery in terms of the intelligences. However, as revealed in Table 5.19, the *p* value for none of the intelligences is less than the required cut-off of .05 ($p<0.05$). Therefore, no significant difference could be found between modes of delivery and intelligences for this reduced sample.

Table 5-19: Mann-Whitney U test for MI subscales and Subject delivery mode

Intelligences	Gender	Mean Rank	*z*	*p* (2-tailed)
Naturalist	f-t-f, on campus	56.34	-.82	0.410
	Distance with some f-t-f component	37.50		
Musical-Rhythmic	f-t-f, on campus	55.75	-.60	0.548
	Distance with some f-t-f component	69.50		
Logical-Mathematical	f-t-f, on campus	55.86	-.34	0.730
	Distance with some f-t-f component	63.75		
Existential	f-t-f, on campus	56.27	-.64	0.519
	Distance with some f-t-f component	41.50		
Interpersonal	f-t-f, on campus	56.36	-.88	0.379
	Distance with some f-t-f component	36.25		
Bodily-Kinesthetic	f-t-f, on campus	56.02	-.04	0.964
	Distance with some f-t-f component	55.00		
Verbal-Linguistic	f-t-f, on campus	55.98	-.04	0.964
	Distance with some f-t-f component	57.00		
Intrapersonal	f-t-f, on campus	56.04	-.090	0.929
	Distance with some f-t-f component	54.00		
Visual	f-t-f, on campus	55.91	-.22	0.824
	Distance with some f-t-f component	61.00		

Note: $N_{\text{f-t-f}}$ =109, $N_{\text{Distance with some f-t-f}}$= 2, N_{total}= 111

5.3.2 Kruskal-Wallis Tests for MI subscales and different Age categories

Running Kruskal-Wallis Tests (Table 5.20) revealed statistically significant differences in Musical-Rhythmic, Bodily-Kinesthetic, and Verbal-Linguistic and Visual-Spatial intelligences across three different age groups [(GP1, n=74; 17-23 yrs, GP2, n=33: 24-45 yrs, GP3, n=4:45-65 yrs), X^2 (2,n=111)= 15.71, p=.00; X^2 (2,n=111)= 7.55, p=.02; X^2 (2,n=111)= 6.29, p=.04; X^2 (2,n=111)= 6.29, p=.04; X^2 (2,n=111)= 9.17, p=.01].

Table 5-20: Kruskal-Wallis Test for MI and different Age categories

Intelligences	**Age**	**Mean Rank**	Chi-Square	***p* (2-tailed)**
Naturalist	Pre-adulthood	56.85	0.20	0.90
	Early-adulthood	53.91		
	Middle-adulthood	57.50		
Musical-Rhythmic	Pre-adulthood	47.76	15.71	**0.00**
	Early-adulthood	70.58		
	Middle-adulthood	88.13		
Logical-Mathematical	Pre-adulthood	56.09	0.69	0.71
	Early-adulthood	54.29		
	Middle-adulthood	68.38		
Existential	Pre-adulthood	55.40	0.67	0.71
	Early-adulthood	55.79		
	Middle-adulthood	68.88		
Interpersonal	Pre-adulthood	52.36	3.10	0.21
	Early-adulthood	62.38		
	Middle-adulthood	70.63		
Bodily-Kinesthetic	Pre-adulthood	50.17	7.55	**0.02**
	Early-adulthood	66.86		
	Middle-adulthood	74.25		
Verbal-Linguistic	Pre-adulthood	50.66	6.29	**0.04**
	Early-adulthood	66.05		
	Middle-adulthood	72.00		
Intrapersonal	Pre-adulthood	57.30	0.87	0.65
	Early-adulthood	52.09		
	Middle-adulthood	64.25		
Visual	Pre-adulthood	50.46	9.17	**0.01**
	Early-adulthood	64.15		
	Middle-adulthood	91.25		

Note: $N_{\text{Pre-adulthood}}$ =74, $N_{\text{Early-adulthood}}$ =33, $N_{\text{Middle-adulthood}}$= 4, N_{total}= 111 **Note:** df= 2

A statistically significant result for a Kruskal-Wallis Test does not show which of the groups are statistically significantly different from each other. To find this out, some follow-up Mann-Whitney U tests between pairs of groups were utilized as recommended (Allen & Bennett, 2010; Pallant, 2011; Tabachnick & Fidell, 2013) with a stricter alpha level of .05/3=0.017. As such, further analyses used Bonferroni's adjustment of 0.017. Given the three comparisons required for each of the significant subscale results from the Kruskal-Wallis Test (see Table 5-21), there were differences between pre-adulthood and early-adulthood for Musical-Rhythmic and Bodily-Kinesthetic intelligences. Also differences could be seen between pre-adulthood and middle adulthood for their Visual intelligence.

Table 5-21: Mann-Whitney U test for MI and Age

Intelligences	Age	Mean Rank	*z*	*p* (2-tailed)	Age	Mean Rank	*z*	*p* (2-tailed)	Age	Mean Rank	*z*	*p* (2-tailed)
Musical-Rhythmic	Pre-adulthood	47.17	-3.422	**0.001**	Early-adulthood	18.26	-1.206	0.228	Pre-adulthood	38.09	-2.365	0.018
	Early-adulthood	69.32			Middle-adulthood	25.13			Middle-adulthood	65.50		
Bodily-Kinesthetic	Pre-adulthood	49.11	-2.454	**0.014**	Early-adulthood	18.89	-.173	0.863	Pre-adulthood	38.56	-1.585	0.113
	Early-adulthood	64.97			Middle-adulthood	19.88			Middle-adulthood	56.88		
Verbal-Linguistic	Pre-adulthood	49.47	-2.272	0.023	Early-adulthood	18.88	-.197	0.844	Pre-adulthood	38.69	-1.365	0.172
	Early-adulthood	64.17			Middle-adulthood	20.00			Middle-adulthood	54.50		
Visual	Pre-adulthood	49.88	-2.064	0.039	Early-adulthood	17.91	-1.773	0.076	Pre-adulthood	38.08	-2.386	**0.017**
	Early-adulthood	63.24			Middle-adulthood	28.00			Middle-adulthood	65.75		

Note: $N_{\text{Pre-adulthood}} = 74$, $N_{\text{Early-adulthood}} = 33$, $N_{\text{Middle-adulthood}} = 4$

To find out the relative magnitude of the differences, the effect size was calculated according to the formula presented earlier (See Section 5.2.1.5.1). Replacing the formula with the appropriate values (Table 5.21), effect sizes for the significant comparisons presented in Table 5-21 were calculated and presented below.

Table 5-22: Effect size of the Significant MI subscales based on the Age Category

Intelligences	**Age**	***z***	**r**
Musical-Rhythmic	Pre-adulthood Early-adulthood	-3.422	**-0.33**
Bodily-Kinesthetic	Pre-adulthood Early-adulthood	-2.454	**-0.24**
Visual	Pre-adulthood Middle-adulthood	-2.386	**-0.27**

Note: $N_{\text{Pre-adulthood}} = 74$, $N_{\text{Early-adulthood}} = 33$, $N_{\text{Middle-adulthood}} = 4$

Interpreting the effect size value based on the guidelines proposed by Cohen (1988; Pallant, 2011, p. 210) (See Table 5.11, in Section 5.2.1.5.1), the magnitude of the differences in the means were small except for the moderate effect size obtained for Musical-Rhythmic (r =**0.33)** of pre-adulthood and early-adulthood.

As a next step, the components from the Principal Component Analysis were used to calculate their correlations with students' MI scores and Age. For this purpose, the score of the nine MI subscales were initially added together to get an overall MI score for participants who had filled out both questionnaires. After that, the correlations between the overall MI score, MI subscales, Age and the two components from the researcher-made questionnaire (Motivation and Learning Experience) were calculated, using SPSS version 22. Correlation analysis is recommended in order to explore the direction (positive or negative) and strength of the relationship between two continuous variables (Coakes, 2013; Pallant, 2011). The results are shown in Table 5-23.

Table 5-23: Pearson Product-Moment Correlation between Age of the Students, their Learning Experience and Motivation, and MI subscales (*N*=111)

	Learning Experience	Motivation	Overall MI	Intrapersonal	Bodily-Kinesthetic	Verbal-Linguistic	Musical-Rhythmic	Interpersonal	Naturalist	Logical-Mathematical	Visual	Existential	Age
Learning Experience	1												
Motivation	.48**	1											
Overall MI	.32**	.02	1										
Intrapersonal	.23*	-.02	.69**	1									
Bodily-Kinesthetic	.32**	.04	.78**	.52**	1								
Verbal-Linguistic	.08	-.11	.77**	.46**	.58**	1							
Musical-Rhythmic	.28**	-.02	.64**	.40**	.47**	.47**	1						
Interpersonal	.23*	.09	.75**	.34**	.51**	.61**	.35**	1					
Naturalist	.19*	.04	.73**	.44**	.43**	.47**	.34**	.58**	1				
Logical-Mathematical	.19*	-.05	.75**	.43**	.57**	.52**	.42**	.53**	.49**	1			
Visual	.32**	.09	.74**	.32**	.47**	.49**	.45**	.58**	.60**	.48**	1		
Existential	.23*	.08	.65**	.43**	.51**	.38**	.27**	.36**	.39**	.44**	.42**	1	
Age	.19*	-.16	.14	-.01	.18	.16	.34**	.09	-.09	.02	.21*	.07	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

As indicated in Table 5-23, the correlation between Age and Learning Experience is $r = 0.19$, $n = 111$, $p<.05$ (2-tailed) and between Learning Experience and Motivation it is $r =0.48$, $n = 111$, $p<.01$ (2-tailed). The correlation between the MI scores and Learning Experience is $r = 0.32$, $n = 111$, $p<.01$ (2-tailed). The largest correlation is between learning experience and bodily-kinesthetic and visual-spatial intelligences $r = 0.32$, $n = 111$, $p<.01$ (2-tailed). As such, the correlation coefficient *r* shows a significant relationship between Learning Experience and Age, Learning Experience and MI, Learning Experience and bodily-kinesthetic and visual-spatial intelligences, and Learning Experience and Motivation. Interpreting the values, there are different interpretations suggested by different authors. According to Guilford's rule of thumb (1978; cited in Hajhashemi & Wong, 2012),

> There is a very high correlation with a very high dependable relationship between variables when correlation coefficient (*r* value) is more than .90; there is a high correlation with a marked relationship when correlation coefficient is between .70-.90; there is a moderate relationship with a substantial relationship when correlation coefficient is between .40-.70; and there is a low correlation with a definite but small relationship between variables when correlation coefficient is between .20-.40; and when the correlation coefficient is less than .20, there is little or negligible relationship between the variables. (p. 245)

However, Cohen (1988; cited in Pallant, 2011) suggests that the *r* value of 0.10 to 0.29 shows a small relationship while the values between 0.30 to 0.49 show a medium relationship and, the values of 0.50 to 1.0 reveal a large relationship between the variables. As such, the relationship of Learning experience and Age (based on both of the above-mentioned value interpretation) in this study ($r<.20$) was negligible or small while the relationship between Learning Experience and Motivation ($r =0.48$), Learning Experience and MI ($r =0.31$) and Learning Experience and bodily-kinesthetic and visual-spatial intelligences($r =0.32$) were moderately significant.

In addition, the relationship between the dependent variables of Motivation and Learning Experience and the independent variables of gender and mode of learning were explored. A 50% split for each of the dependent variables was undertaken, that is the researcher divided participants into two groups, namely high and low achievers for each of the variables (Motivation and Learning Experience). To explore the relationship between two categorical variables, a Chi-square test for independence is recommended (Pallant, 2011). According to Pallant (2011), each of these variables can have two or more categories as the "test compares the observed frequencies or proportions of cases that occur in each of the categories, with the values that would be expected if there was no association between the two variables being measured (p. 217). This test is based on a crosstabulation table in which cases are classified according to the categories in each variable.

After running the Chi-square test for independence, the researcher checked the findings to ensure that the assumption of the chi-square concerning the 'minimum expected cell frequency' of 5 or greater had not been violated. No violation of the assumptions had occurred. The Chi-square test for independence (with Yates Continuity Correction) showed no significant association between gender and learning experience status, $\chi 2$ (1, n = 111) = 0.11, p = .74, *phi* = -.05 and between learning mode and learning experience status, $\chi 2$ (1, n = 111) = 0.61, p = .44, *phi* = -.14. This means that the proportion of males' learning experience is not significantly different from the proportion of females' learning experience. There appears to be no association between learning experience status and gender. Further, in this type of analysis, the effect sizes are based on either the Phi value or Cramer's V. Analysing the Chi-square between learning experience and gender, Phi value, which is a commonly used correlation coefficient that ranges from 0 to 1, was used as the tables are two by two categories per value (Pallant, 2011). In this case, the Phi value is -.05 which is considered a very small effect using Cohen's

(1988; cited in Pallant, 2011) criteria of .10 for small effect, .30 for medium effect and .50 for large effect.

Another Chi-squared test for independence was conducted to explore the difference in motivation of students based on their gender and learning modes. The Chi-square tests for independence (with Yates Continuity Correction) revealed no significant association between learning mode and motivation status, $\chi 2$ (1, n = 111) = 0.00, p = 1.00, *phi* = -.034 and gender and motivation status, $\chi 2$ (1, n = 111) = 0.00, p = 1.00, *phi* = -.004.

5.4 Summary of the Chapter

This chapter illustrated the quantitative data analyses and the results which were applied to respond to the research questions for the quantitative component of the study. The aim of these questions was to determine the relationship between students' MI scores and their age, gender, learning experience and motivation. Based on the descriptive results obtained from the MI profiles, it was revealed that students are higher on Intrapersonal intelligence and lower in Existential intelligence. Bodily-Kinesthetic and Musical-Rhythmic intelligences were other highly developed intelligences of students. In addition, it was revealed that the students in the pre-adulthood category are higher on Intrapersonal intelligence and lower in Existential intelligence. Early-adulthood respondents are higher on Bodily-Kinesthetic intelligence and lower in Existential intelligence. The middle-adulthood respondents are higher on Intrapersonal intelligence and lower in Existential intelligence.

Further analyses, Mann-Whitney U tests between the two genders and MI subscales revealed a significant difference between gender and Logical-Mathematical and Intrapersonal intelligences. However, no significant difference was found between modes of delivery and

intelligences. Although the Kruskal-Wallis Test showed significant differences between age groups and some intelligence, the interpreted effect size value of the findings revealed a small magnitude of the difference in the means except for the moderate effect size obtained for Musical-Rhythmic (r =0.33) of pre-adulthood and early-adulthood.

The correlation coefficient *r* values showed a negligible significant relationship between the two variables of Learning Experience and Age of the participants. The relationship between the two variables of Learning Experience and Motivation (*r* =0.48), Learning Experience and overall MI scores (*r* =0.32), and Learning Experience and bodily-kinesthetic and visual-spatial intelligences(*r* =0.32) were also moderately significant.

The results of the Chi-square revealed that there was no significant difference in students' gender and mode of learning identifiable among high/low achievers of both variables of motivation and learning experience. The next chapter will provide a report of the qualitative findings of the study.

CHAPTER 6

LECTURERS' RESULTS AND DISCUSSION

6.1 Introduction

In presenting the findings from the interviews, this chapter focuses on the lecturers' research questions in two sections; namely: perceptions/attitudes of different video types and purposes, and perceptions of the advantages and disadvantages of the flipped classroom. As such, the chapter includes the data driven from lecturers' interview excerpts. All interviewees' names are pseudonyms and the reported excerpts are copied verbatim except where indicated. The total number of lecturers participating in the study were 13. Among them, six were baby boomers and the remainder belonged to Generation X. Their ages ranged from 35 and over. All participants were from two different disciplines, namely, Educational Sciences (*N*=10), and Behavioural Sciences (*N*=3). The group's educational rankings ranged from a lecturer to a Professor.

6.2 Perceptions/Attitudes of different video types and purposes

This section presents the findings for **Question 1:** *What different modes and purposes are there for online videos?* The findings presented are based on the lecturers' individual teaching experience. The findings of the thirteen participants are presented in the following.

Adam, an expert educator, uses three main types of videos including the weekly overviews/introductory, instructional, and content-supplementary videos. He uploads videos every single week of the course and videos are a part of the core materials that students need to look at. The introductory videos are short YouTube videos of him speaking about the week's work in general, some of the important things that students need to look at, and also a means of transferring important messages. He produces these videos using an iPad and uploads them

in his YouTube site. To him, approaching students via video messages is superior to contacting them through either email or putting the message in the discussion board or on the subject site. He believes that students just need to listen to the message and remember it while other types (i.e., emails, discussion boards) require the message to be read. Adam has also received positive feedback from students regarding this approach.

The second type of videos are instructional videos which show students how to use a particular software. For instance, as he is teaching subjects dealing with digital technologies, students need to use web design software to create a website. As such, his created videos instruct students through a step- by-step process demonstrating what needs to be done.

The third type of videos are those supporting students' content for that week. As an example, it may be regarding their learning about the use of interactive whiteboards. Adam believes that a lecturer can't always give students the practical experience but through videos they can see how things are happening. Thus, the video might be showing how interactive whiteboards are used in a real school setting or it might be a video about a particular learning theory that is being talked about.

Comparing his previous work on creating an online subject using a trial website, he talks about the technology experience that has facilitated the creation of the video in an easy way. For instance, he states that,

> *with my iPad, I can just put it above my monitor, have some notes on the screen that I can see as prompts and then I can just produce the video, press Dub on the record and then just press the upload within a couple of minutes it's on the YouTube and then because YouTube has its own editing suite online, you can just go in and fix it up and then make it available to the students. So it's all very fast, very easy*

Besides the videos that he creates, Adam uses videos from YouTube and TED talk. However, he suggests that,

> *You have to get it across to the students so it's not just entertainment; you don't pick out videos just to get students interested and entertained. They have to really… the link to what you're trying to teach them in that subject so they have to be well into the content. Sometimes students don't see that link. They might think I just showed this video for something to do, filling a bit of time, so you have to make it very clear to the students so that it is part of the content and how it links to the content.*

Jacob, a lecturer in Education, uses Camtasia to create and record his flipped classroom video materials generally a week or at least three days before class. Those videos are used with the third and fourth year subjects. Sometimes, Jacob uses video clips from other sources (e.g., YouTube) as part of the videos of the lecture that he provides. He believes that,

> *Probably 95% of the videos would have been my lectures and five or less than 5% were other videos.*

Jacob utilizes videos for his science subject. Inferring from the students' feedback, he states that they have found these subjects very heavy going and very difficult to keep up with the material as presented in a lecture. In short, the face-to-face lecture provides students one shot at the material.

By putting the lectures onto a video, he doesn't need to repeat the whole lecture if students do not understand it. Jacob also adds that students could use the videos for revision for their examinations. They have the opportunity to review the video multiple times. He states that students would use the videos,

> *For consolidation, repeating material, going back over it again, checking what's happening, maybe the key points of the week.*

To him, the main reason for using videos is to give students flexibility in how they access and engage with the lecture material and hopefully be more motivated to learn the content. He

enjoys the idea of integrating a video into his teaching in order to give the students experience of something that couldn't be made easily in a face-to-face setting.

As a psychology lecturer, Amanda mainly uses three types of videos. These include the publishers' supply, YouTube video clips, and movies. While the former include short, traditional video clips of popular past experiments, the second, YouTube clips, are quite short, two or three minutes. They are basically used to provide students with an alternate explanation or example of what she has been discussing in the lecture or what they have been reading in their textbooks. Accordingly, she believes that,

> *Part of being critical thinkers is to be able to apply the knowledge to different situations, and so if they can be exposed to different examples, I think that's the start of that process.*

She may bring a movie to the classroom for discussion and reflection. The students might watch two movie clips, followed by discussion questions based on aspects of the movie. Part of the discussion may be to see how the theory they have been exposed to in class can be applied to the movie situation. Although she doesn't create videos, she believes that integrating videos, regardless of the type, can help provide authenticity for the students. Videos can provide interest in breaking up the lecture as well as providing different examples to clarify the concepts particularly in Statistics. In this regard, she posits that,

> *There's a lot of Stats video clips out there and so if they haven't understood a particular concept maybe by going to the video clip and seeing it worked from first principles might actually make more sense, and often times it might be that it's really important to have several people presenting the derivation or whatever of a particular technique because we all sort of say things in slightly different ways and it might be that this clip actually clicks for somebody whereas, you know, what I've said maybe hasn't.*

Tracy, another expert in Education, uses two different types of videos in her subjects. The first one is an overview/introductory video that she makes every week using Photo Booth. As her students are online students, her videos remind students what they need to do and provide them

with some task information. Even though the content is already on Blackboard, she believes that seeing her talking about it makes a difference to the students. She also picks a lot of videos relevant to the lecture topic from the YouTube site. She generally picks short clips as she doesn't know how to edit them and she admits that she suffers from a lack of technology literacy. Tracy selects a lot of YouTube videos that have student input. Discussion boards can help students feel that their opinions are valued. Although she cannot find everything that she is looking for in YouTube, Tracy can often find things that take the concept and show students how it works in real life. Referring to her previous experience with the Booth videos**,** she usually asks her online students in their face-to-face appointments to allow her to record the session to post on Blackboard when they have questions and problems about assignments. She then drags it onto her desktop from Photo Booth and attaches it to Blackboard.

YouTube videos are the only type of video that Rose, a lecturer in Psychology, uses to support her teaching. She doesn't create videos but she uses a lot of YouTube videos to illustrate a particular point that she has just reached and to make the content more relevant. For her, the video integration depends on its relevance to the point she is making being more salient to the students. In other words, to provide students with an extension of the particular point. For instance, she provides an example of her recent video use for a first year lecture. The three-minute video was on consciousness where people begin to develop a sense of self. She showed them a video about babies who had a red mark on their forehead. Some of the babies, before a certain age, were not aware of the red mark on their forehead when they were looking in the mirror. They tended to look in all the other places except where the red mark was placed. However, once children had developed a sense of self-awareness, they recognised that the red mark was on them, and that it was them that they were looking at in the mirror. So, they recognised themselves in the mirror. It might look like a simple short video but it has been used

to illustrate that point. This expanded the information about the topic that she had presented. Then she returns to the lecture and talks about some of the implications that have arisen from the video.

Emma**,** a Psychology academic, is keen to use two types of videos namely, YouTube and the psychology textbook publishers' videos clips that come on the disk with the books. Regardless of the type of video, she uses a two-to-five minute clip to facilitate understanding of an illness. For instance, in the Early Childhood Disorders where she talks about Aspergers, Autism, and intellectual disability, she often uses one movie and four three-minute clips in total. She uses videos as it is not possible to access mental institutions for student placements. Even though there is a Psychiatric ward in the hospital, undergraduate students don't go on placement there. Students just read about the mental illnesses in the abstract. However, to make it concrete and real for students who may have never interacted with a schizophrenic or someone who has paranoid delusions or other disorders, she uses the available YouTube video clips by googling the term or the publisher's short movie clips. In this way, students are familiarized with aspects of the disorder. By using the publisher's videos, she aims to show students how the mental illness would manifest itself in real life without it necessarily being in real life.

Barbara, a lecturer in Education uses two different types of videos. This year she introduced the flipped video for her first year subject. She made the videos using Camtasia. The second type of video is from YouTube, ACARA resource bank, and any other useful site. The videos that she makes are about seven to thirteen minutes and she uploads two per week. She uses YouTube videos to provide a different way of explaining something. For instance, she uses YouTube videos to deconstruct a concept such as behaviour management. As such, she might show a short video of a scenario in a classroom and then they talk about how it was managed.

It acts as a scenario-building tool. Students might read about a particular concept which will be discussed at a later time. She might get students to do an activity around it, followed by a short YouTube clip. In order to find the appropriate videos to upload, she uses the ACARA resource bank as well as searching on the net. She goes onto YouTube and other listed sites on her browser and searches for videos that she is looking for. While she edits the videos she has created, she just cuts out the advertisement from the others she has downloaded before posting. She integrates videos into her teaching for a number of reasons. These include strategies such as presenting concepts in another way in order to help students understand them, and enhancing their learning by visualising what it might look like (e.g., learning about molecules' behavior), and as a way of deconstructing, (e.g., a pedagogical situation). Furthermore, she states that,

> *I just like to adopt different approaches to teach a concept. Secondly, because it breaks up a two-hour lecture, you know, so it gives a bit of variety and different stimulus to go on and discuss something.*

In making her own Camtasia videos, she does it slide for slide separately and when she has them all, she joins them together and puts transition in. She does them separately as she might need to change or add a slide next year. In this way she can change a slide and not the whole thing. Utilizing a focus group with her students, she found that the videos that she creates have been found to be useful for their examinations. Furthermore, they could stop the video at any time to make sure they understood the concept that she was trying to get them to understand. Although she admits that some lecturers make overview/introductory videos, she doesn't make any. She also believes that by doing the videos, students are developing knowledge and comprehension of the subject area.

Noah, a lecturer in Education, uses three types of videos in his lectures, including the weekly overviews, instructional, and content-supplementary videos. Noah records the first two types of videos namely, weekly overviews and the lecture tutorials using Camtasia. The overview

recordings are short, five to ten minutes, summarising what's happening that week. The focus of these videos is not only on the scientific concepts, but also on the readings and other aspects of the topic for the week. They also introduce some sort of virtual manipulatives and help students to have an idea of what is happening that week.

Noah also uploads slides and records short tutorial activities on the main concepts so as "*to connect the dots*" on that concept. He admits that his video recordings may not be very professional. He uses them for his students' knowledge and he doesn't see the necessity to make them perfect and professional. He also uses professionally-made videos from a website to demonstrate a concept like how to plot a graph. For every major concept, he uploads a professional video that he draws from the bank, alongside his short Camtasia video that pulls together the main ideas and connects them to that topic. Before and after using a video, he assesses the video from his practical perspective to ensure that it properly conveys and adds to students' understanding, problem solving, and reasoning. Noah believes that with the use of videos, there is a basis to start a robust discussion with students. In addition, he states that "*videos work like a stimulus to engage and motivate students*". He also adds that,

> *They stimulate, they introduce the concept in a sort of less, or in a more friendly way and they motivate a lot of students, but on their own I don't think, it stands alone.*

Presenting the whole or part of the lectures through videos helps students with their understanding. They can easily watch the videos several times for their revision and understanding of the concept, and they can go back to them at any time. From his experience with videos, he also refers to the positive learning experiences for students. He states that,

> *I haven't met any student who had that negative experience with videos, no, because, like I said, it's a much friendlier way to introduce, and you can go over and over and over again if you don't understand the concept.*

Wendy**,** a professional educator, uses only short and accessible YouTube videos in her teaching. She incorporates different kinds of YouTube videos onto the Facebook pages, along with the five minute summaries of the weekly units of work for first and second year subjects but particularly the first year subjects. She believes that students' attention span tends to come in 15-minute slots, hence the 15 minute turnaround time. If there is some conceptual knowledge that she wants to impact, she often introduces that conceptual knowledge with some sort of popular media idea. For students to gain an idea of what discourse is, she might show students a parody clip such as "*Summer Heights High*". Students can relate to it because it's part of popular culture and it's funny and they are able to engage with it in order to understand the concept. She spends a lot of time looking for appropriate YouTube clips of something topical that the students would be familiar with in order to lead them into the concept that she wants to teach them. Sometimes the clips might be a bit longer than usual. Even with YouTube videos, she is grappling with whether to do it through Google Sites or something else in order to be able to embed it. She states that,

> *All of those sort of preliminary things about how to, I have been to professional development about how to do videos here and compress them and all that sort of stuff. YouTube does it on freeware anyway so that's much better so for me, quite a lot of that professional development which would have happened a couple of years ago is, kind of, obsolete now.*

Wendy uses online videos for two main purposes. One objective is to try and connect what the students already know to something new that she wants them to know. Second, to engage students who are visual and auditory learners, and give them synopses of what they're about to do by using short YouTube video clips. As such, she uses digital technologies a lot to get students to engage with concepts in another way than trying to read it in a book. To make theory more accessible for students, she takes them from something that's familiar towards the new knowledge. In short, she feels that technology is really advantageous for that.

In order to give students a little bit of a wrap-up each week, Wendy has created some videos by using Camtasia. However, she doesn't do these personally anymore as she believes that sometimes the technology is a little bit beyond her. More recently, her tutor created the five minute overviews of the week's work. To Wendy, the overview videos are the easiest way to connect what students might already know with what she wants them to know. She assumes that for different kinds of learners, particularly the wholly online learners, they like the weekly overview videos as well as the introductory videos. Further, she believes that those overviews give students a little condensed version of what to expect in practice.

In recalling her past experience with discourse topics, she used to take pictures from magazines and workshop those with students by imagining the kinds of language that they would use. For instance, the language that would be used by a person dressed in spiky, leather gear. Now, with a video, lecturers can take a clip of something and say: let's think about what kinds of things they said? What kinds of words did they say? Videos have helped make the classroom setting more realistic than before. She believes that using videos is much more engaging than just using a fairly boring picture. She also admits that,

> *So, you know, there's some really good sites with short video clips like Teachers TV, the UK site. Great stuff that we can just pull off and that's very good because we often struggle with resources that are copyrighted, for example, and so using YouTube videos or those sort of sites is really good because we don't have to worry about the copyright stuff. It's public already.*

Videos that Julia, an expert in Education, makes tend to be particular to the week-to-week activities replacing the traditional lecture mode that lecturers might use. As such, she does a Camtasia recording; a video of herself placed in the bottom corner of the screen as she speaks to the content of the material on the slides. She always tries to ensure that videos do not go over 15 minutes as some would say 7 minutes is sufficient. However, she has encountered a dilemma about knowing the preferred type and length of videos. The videos she makes give a

summary, while some of her students want the traditional 2-hour lecture recorded in an audio or video format. Currently, she is unsure which works better, that is, keeping with her quick 15-minute maximum type summaries or providing a total recording of her teaching that appears boring to her. To her, the main reason for using videos is to provide some type of social contact or presence for the students.

In addition, she has also created videos on health sciences. She has got videos of primary school students with printed permission doing physical activities. For example, she has filmed someone doing an obstacle course or someone playing a game of soccer and she uses those as created videos in the teaching of the subject. In these videos she has purposely decided, and approached a teacher in a school in order to create some authentic videos to use snippets from them to support her teaching. Besides the videos that she creates, Julia grabs videos from YouTube, and PE Geek which is a technology site with a variety of technologically adapted bits that can be added into her teaching.

She adds to the authenticity of the experiential/practical subject by getting students to mentally engage in health science activities. Consequently, she needs to provide some way for students to engage with that concept in an online way. She wishes that she could get them to do an actual activity that would get them to put their bodies into it. However, she needs to look for videos that help authenticate it. As such, she believes that video clips,

> *can throw them into being a teacher in that and making observations as to what that play pedagogy means, so it adds, I think it's adding to their experience, their learning experience.*

She usually creates her online vodcasts to last for 15 minutes. Occasionally, when she's got a really in-depth topic to present, the videos are longer, about 20 minutes.

The type of videos that Michael, a lecturer in Education, uses could be categorised into either videos that he makes which are instructional or videos from YouTube and TED talk. For instance, if students are unable to create a website, he would create a short one-to-two minute instructional video explaining how they would do it by providing it on YouTube. He also makes the YouTube available through the Blackboard system. He also adds that the length of instructional videos may differ based on the context or question. For instance, when students have questions about how to create something on the web or they want to know how to add a different page to a Google site, then videos are one-to-two minutes in length. But when they're going through content of the lecture notes, then videos go from 10 to 20 minutes, as they are replacing a one or two hour lecture that would require him to contextualise things. The instructional videos are contextual so students can have a better understanding as to the purpose of them. Other ways of using videos would be if he thinks there is a value in an online YouTube or TED talk or a resource that's available through the library system. In those circumstances, he would make them available on Blackboard. While students have the reading materials and the lecture notes, Michael gives them a video to watch, be it a TED talk or a highly charged type of video for them to watch before coming to class. The videos are contextual and provide them with information that isn't really part of the subject in terms of assessable content. They can discuss it and also have a sense of what the content would be. Hence, he uses the videos and asks students to participate by either proposing a question that they have after watching it. To him, dealing with students' questions and their week's activities and assessment through videos is superior than trying to just make a post on Facebook or sending an email out to all students. It assures him that he has addressed questions during the video and all students are expected to watch the video before they come to class. Accordingly, he states that,

> *I do a lot of before reading, before watching, while watching, while reading, and after reading, after watching, kind of prompting to ensure that they're aware of what they should be doing while they're engaging with any form of text, be it visual or copy based.*

To him, some of these topics are huge and as,

> *We're dealing with students who come from all levels of understanding and knowledge about technology or about indigenous education, providing those other video tools in addition to readings and text they can access as well, provides them with a better understanding of what they can actually learn about the topic that we can't cover in a lecture because of their time constraints.*

Michael is also aware of the Learning Management System having either an approach that can be used to ask students to watch the video, answer questions and then come to class; or ask the class if there is a question about a topic, then find a relevant video to make available in that week's content. If it's a bigger topic he can talk about it during a lecture, and address the video verbally as,

> *Look, I've got a great video that I think would help you understand some of the context of indigenous education or what's happened in a particular community. So watch that if you're interested, so it's not a must-do, it's if you need to in order to understand it further, and I say that it's not part of the curriculum and it won't be on the test but it's made available so you can understand the context a bit better.*

He also creates videos using Camtasia as well as e-lecture recordings of his lectures that are part of the university system. However, he states that he is using those e-lectures less and less even though he has had good feedback from the students who have found them useful. As a reason, he states that,

> *I can do a Camtasia recording in my office and send that out to students. And it's actually faster because I can do a Camtasia and it's available in two hours whereas if I do an e-lecture recording of my lecture, then it's available in three or four days.*

Michael has also been able to implement the videos and his technology literacy effectively in order to motivate and engage students in this video-assisted mode of learning that caters to student needs. For instance, Michael uses Animoto, to show students how they can make very short videos. He has captured a lot of his tutorial activities and then has put them into Animoto movies which can each be 1 minute long. It means that they can easily be created on their iPad or on their phone. In addition, he either records videos using Quick Time Screen Capture or any of the other short-term kind of screen recording tools or just uploads as one shoot. In further

meeting students' needs, he also provides an audio podcast as well as a video recording as additional methods of getting content for those who would love to be in a face-to-face setting but they've got family or work commitments.

Jennifer, a lecturer in Education, uses a lot of videos in her teaching as she believes that it is a huge subject which should be covered in a short time. Students don't get the opportunity to practice what they're learning with students in schools. Unfortunately that is part of the way that the curriculum is run. However, as she would like to show students what children do, she relies heavily on ideas that mostly are from the United Kingdom. Another way of using videos is by creating her own teaching materials.

Although she has created some instructional videos, she has faced ethical barriers in Australia. Hence, ethical barriers are one of the reasons why she has relied on a lot of English materials. Referring to her step-by-step instructional videos, she is trying to explain to students how they will use an object with children, start telling a story that the children help to make up. What they have to do for their assessment is to find an object like an old coin, and write it up as a script of how they would do it with children. For example, she made a video with a little boat. She needed to explain to them how she would start the process with the boat, and what she would say to the children and how she would develop the idea by asking a question such as: who owns this boat? In helping to develop the story, it would be followed by imagining questions and responses from the children.

Even though she doesn't use any overview/introductory videos, Jennifer would prefer to use something like a TED talk to provide a big picture idea, with the purpose of not giving them facts, but inspiring them to ask questions and start a debate. To her, these videos are more

instructional. She has done instructional videos that were about content, and instructional videos that were about tasks. Content ones provide information to back up what they're already doing, or about challenging them to ask questions, or to inspire them to see beyond the task.

To her, two main reasons for utilizing videos are to show students very innovative, high-quality, and professional productions which take students away from that idea that a play is a certain thing where people stand still and talk. In the real world, it's much more innovative than that. The second reason is about engagement, which is showing them real children doing the arts, whether it's a lesson on painting, or whether it's drama, or a dance. Using videos in teaching have also helped her to demonstrate hands-on activities, and enabled students to see what it's going to be like in a real classroom. She mentions that students always want an exemplar and they are seeking a person to tell them exactly what they have to do. However, sometimes it's really hard to explain that in words, unless you make a film. Videos can also humanize the setting and thus students can see what to expect in a real setting. The point of the video for her, is to show students something that they won't see in their everyday life because nobody is doing it. As such, she believes that,

> *Videos are giving them a window into what it would look like.*

She also believes that students like variety in their learning and they don't want to just learn with words. We are in a visual world, and we are in a world of image. Further, she believes that videos have a great value in humanizing the contact as some of the students taking the subject are mothers or working people and need to feel that you are a real person. Through the online videos available on the internet, she can also show students really good quality, and inspiring videos which they can't see here. However, she states that,

> *The lecturer's job is to point them in the right direction, to something a bit more quality.*

As such, she often uses something humorous, in the beginning of the subject, because humour is such an important aspect of teaching that people don't use enough. So, she acknowledges that,

If it's something funny at the beginning, leads to everybody feeling relaxed.

As a lecturer, Brian, uses about a fifth of his face-to-face lectures with online videos that are not over five minutes in length. He chooses videos for two main purposes: to contextualise the theory for the week, and to provoke students. For the former reason, he starts every lecture with a video. For instance, in week two of a lecture on development, students need to look at concepts like intrapersonal and interpersonal asynchrony in an educational context and see how different students will develop at different rates but they'll all be grouped in the same classroom because of the age-based structure of schooling. Thus, those asynchronies in physical development can create some interesting and difficult social dynamics that affect how children engage or disengage in learning.

For the second reason, he always shows a five minute video at the very beginning of that lecture about a young boy called Richard Sandrak, who was a six-year old body builder who enters these bodybuilding competitions and he's ripped with massive muscles and an eight pack and looks very unlike on average six-year old child. However, the feelings evoked in his students are different. Some are quite repulsed by this young boy and think that his parents are essentially abusing him by letting him spend that much time in the gym, eating those supplements, and being in that sort of social environment amongst other bodybuilders. Other students are thinking he's organised, he's got a routine, he's motivated, he's physically fit, he's strong. The video is used as an entry point into some of the key issues on physical development. He does this every week for every topic.

Instructional videos are the other type of videos that Brian uses in his teaching. These videos are short video explanations of difficult concepts, such as neuropsychology. For this he shows students a little clip on the process of myelination of the axon. As such, he states that,

> *because it's got a lot of technical concepts, you need a visual of the neuron, you need to see the little packets of myelin and with graphics of the signals moving across to make sense of it; in the behaviourism lecture I show a little video on Pavlov's dog and classical conditioning, that gives a narration and little graphics of the neutral stimulus, the condition stimulus and so on, just to reinforce the verbal explanations that I've given before.*

Besides the above-mentioned two main types of videos, Brian shows one or two funny videos that get students thinking broadly about a topic. For example, he shows a little 60 seconds cartoon from a cartoon series called Pinky and the Brain. It's basically a song that reads its way through about 100 different technical brain parts. With the cartoon, he doesn't want to teach them any brain parts, but to get students having a laugh and thinking about neuropsychology.

Some of the videos that he uses in his teaching are produced by the Hunter Mental Institute of Health and they're like five minute video scenarios. They're very authentically made but they come with a whole range of ancillary materials as well. For him, finding videos that already have accompanying materials are quite useful. He also uses the video illustrations that are on the AITSL websites with the seven national standards for teachers. To him, they're great because now teachers can see real teachers out there. For example, some of the videos are made by local high school teachers.

As Brian has his own private YouTube Channel, he uploads some of them there and then provides a link in the actual PowerPoints for students to go and watch them. Earlier, he tried to keep videos under ten megabytes and uploaded them straight onto Blackboard so that students could access them on the site itself. In the actual lecture, he tends to download those videos

onto the hard drive and plays them off his hard drive. In this way, he does not need to rely on the university's internet connection working.

Comparing his previous work on external students, he made a number of introductory videos over the years. He then reviewed the difficulties encountered. For example, he had to shoot the introductory videos on the studying topic from physical locations which required him to take his video camera. However, today, with the help of technology, he can stream a video and link it to his private YouTube page. He can also put a 20 megabyte video on to engage more students, and of better quality because of the internet connection. He also states that,

> *It's a different mode of communication, so it's adding visual stimulus, it's adding audio, and I think, especially with the online cohorts one of the difficulties that online students have is connecting at a personal level with their lecturer and with each other, and so I think that, for me, those videos enabled me to establish a bit of, at least a trust connection with students.*

It's important for him to humanise education and to humanise learning without just making it all about him or all about them videoing themselves. He tries to find that balance between having a human space on an online platform, and what he thinks is important. He believes that,

> *Videos need to complement other modes of learning otherwise videos would just replace the sage on the stage waffling on for two hours*.

As such, he states that videos really complement the textbook theory and the expository, verbal lecture theory. They feed into students' understanding of an assessment piece, their motivation to learn as well as their relevance to teaching.

6.2.1 A Synopsis of Interview Findings for Lecturers' Question 1

Based on the lecturers' responses, there seems to be distinctive similarities and differences between two disciplines in the extent of video integration and types of videos that they use. The most visible similarity between these participants is in terms of incorporating different kinds of short YouTube videos. As for Tech-literacy, unlike participants from Behavioural

Sciences who relied on videos from YouTube and other online resources, all participants from Educational Sciences could create their own videos by using Camtasia, and not having a reliance on the available online sources. Moreover, there seems to be certain tech-literacy differences between baby boomers and Generation Xers. Although the university has provided optional teaching and learning workshops by inviting expertise from outside, it seems that lecturers in the Behavioural Sciences do not have the required technology literacy to make it work, or they are not sufficiently motivated to participate in these workshops. In fact, they need to understand that today's classroom setting and students are challenging their various levels of proficiency and reliance on technology. On the other hand, one of the Educational Sciences' baby boomers seems to have a high tech literacy. As an expert in the technology, he makes use of all three types of web-based material as an indispensable part of his career and interest. He prefers to make the needed videos rather than taking a ready-made one from online bases. He attempts to make both visual and auditory representations in the minds of his multi-generational students. Another Educational Sciences' boomer participant admits that she suffers from a lack of technology literacy. Although she creates her videos using Photo Booth for her online students or picks videos relevant to the lecture from YouTube, she still needs to engage more with the university's supportive workshops. A key feature of virtually all the participants was that the use of digital video in their teaching is expanding as time goes on and that the student learning benefits were obvious and increasing as competence and systems improve. One aspect that appears to be missing from the educators' responses is a lack of consideration of the different multiple intelligences that students bring to a classroom.

6.3 Perceptions of the advantages and disadvantages of the flipped classroom

This section reports the findings for **Question 2:** *What are the lecturers' perceptions of the advantages and disadvantages of the flipped classroom?* The findings presented below are

based on the experience of five lecturers from Educational Sciences who have taken advantage of the flipped classroom approach in their teaching method. Among them, three participants out of five were male, and two were females. They all belonged to Generation X as classified by Tapscott (See section 3.2.4).

According to Jacob**,** a huge benefit of flipping the classroom is that it offers flexibility and the opportunity for the lecturer to respond to the needs of the students. As such, he states that,

> *The students needed to have more time to engage with the content and by doing it flipped, they had the flexibility to spend more time working through the content.*

In addition, flipping the classroom has provided him more time in the tutorial to do more of the hands-on work with science equipment that he wouldn't have had the opportunity to do through a lecture. Consequently, he thinks that the subject has become more engaging, but not because the videos were online. He reasons that the flexibility of putting the videos online allowed him to make other changes which made it more engaging and increased the students' engagement with the materials. Additionally, Jacob argued that other advantages are around the opportunity to make changes to other aspects of a face-to-face lecture by making it more responsive to students. For instance, he adds that,

> *Once a video is recorded, you don't necessarily have to give the lectures again every year, it might mean you re-record them every couple of years, so that you can use the time there to create other things online because there's no resources.*

In essence, it frees the lecturer's time to create other things that the students can engage with, for example, he can integrate some online quizzes in the area where students are struggling.

Although this approach has provided multiple benefits, Jacob has also experienced some major challenges. For example, some of the issues include the use of Camtasia, lack of flexibility, and how to present the videos to the students in the online platform that they have to use. At his university, they use the Blackboard platform which he described as being somewhat clunky.

It takes time to put the videos up as they go up as a single URL. There is no image of the videos that go up. Accordingly, he has had to put up the links and explain the links as there is no way to overcome that challenge. In using Camtasia, he also adds that,

> *When you record in Camtasia, you only record it at a certain size, so, some students wanted to watch the lectures on other platforms and they couldn't. So, there are some things there which we tried to get a solution and IT couldn't help.*

He also appoints that the flipped model could not be used with the first year students as he thinks they lack experience and they benefit from a bit more interaction with the lecturer. He thinks that first year students are "*finding their feet with how to do university*" and thus, need more guidance. In teaching the third and fourth year subjects for a few years, he believes that he can predict what the students in those levels are going to ask and what assistance they will require. Thus, he can present the information in the workshop. Whereas for the first years, "*they come from such a wide range, it's much harder to see what sort of questions they might have*". He thinks that the approach works quite well for the later years of a bachelor's degree or graduate diploma, but not for the beginning years.

Brian has also implemented a flipped model approach in his teaching. According to Brian, the flipped model offers possibilities. Despite the buzz around the flipped model in educational settings, Brian thinks that flipped is a relative and a relational term. To him, flipping a classroom is a response to what is seen as being quite one-sided, traditional teacher-centred approaches to education, especially in higher education; so, flipping it 180° is, in his mind, just reversing the problem. He argues that,

> *If you flip it, and perhaps you wouldn't call it flipped then, but if you move that 90° so that there's more of a dialectical process between teacher and student, which I think most good teachers know already, then I think you're going to get better outcomes than if you are just a teacher centred sage on the stage windbag filling empty vessels, or if you're a sort of progressive, just everybody pooling their ignorance pedagogy as well.*

Thus, it's a neutral concept to him as he thinks that using the term blended in a way is nonsense as, there's plenty of traditional teachers who already blend their learning in different ways. However, as they're not hooking up to the latest iPad app or showing an interactive PowerPoint presentation doesn't mean that their learning isn't already blended as it might be blended in much more subtle ways than the person who is doing that. But those subtle ways might actually be much more effective in engaging students in that classroom.

Being aware of the university's attention and funding in this current climate taps into what is happening culturally. Brian has experienced considerable challenges in implementing this approach. These include access to technology, funding to access that technology, mastery of technology, and keeping up with technological change and innovation. A lecturer just gets used to one operating platform or one software system and then it's updated and outmoded and overloaded by something else. He thinks that in a lot of the software and hardware development there is a lot of planned obsolescence. For example, he states that,

> *It's not in the interests of a big corporation like Apple to lay down all of their cards at once and release the best be-all and end-all phone or application or the latest Mac product at once.*

Indeed, it's in their interests to keep a captive market and audience who need to buy that different shaped power plug in order to charge their new computer, or who obsessively thinks that it's important to get Version 6 instead of Version 5. For these reasons, he concludes that,

> *If the universities jump on that technological bandwagon a little bit too quickly, financially just to keep up with what's going on externally, you're going to be spending bucket loads of money just to update your computer so it's got a couple more meg and a couple more gigabytes and a bit of a faster processing speed that's not of use anyway, when the computer that you've had for the last three years is fine to kick for another three or four years, and if we're spending that sort of money just to look good, it can be much better spent elsewhere.*

Julia has never had a traditional lecture and she has always had some type of flipped activity in the middle of a lecture. She claims that,

> *I would have to teach for 20 minutes, then straight to a group work activity; so I've always been flipping my classroom as such in creating more interactive spaces.*

Julia thinks of the advantages to the learner in terms of flexibility, and to the staff in terms of freeing up some of their lecture time, and contact time. However, she believes that it doesn't replace the amount of effort that a lecturer puts into a lecture. It is costly in terms of the time it takes to produce the videos and the online materials. Although she thinks that there is a role for the flipped classroom as we've moved away from the traditional model of the lectures, she contradicts herself when she explains that in other disciplines within the institution such as medicine, dentistry, and those in the health and science domains, the traditional lecture still has a very focused role. Those disciplines operate quite traditional lectures and tutorials possibly because of the foundational knowledge that is required. Within these disciplines the flipped models might work better in later years of the course.

To her, the challenges are around the structure. It is communicating the structure to the students and being explicit about what the demands are of the student. She admits that she is scared of the impact on retention when it's a flipped classroom model that doesn't work very well and turns students away. She has been involved in a project as the subject design staff working with a colleague running the flipped classroom approach by considering cultural diversity. Accordingly, she knows the expectation from the lecturer that the students access all the materials and attend class with a knowledge base. Like Jacob, she affirms that first year students need small scaffolded tasks, be supported, have formative building to summative assessment, have a structured transition from high school into university and ensure the flipped classroom materials online are done well. In short, she thinks the flipped classroom approach is "*too much*" for first years. She also admits the program can work for other levels (2nd, 3rd, and 4th year). She states:

> *They've been introduced into what higher education looks like, what university is about and then they might be able to enact and move into the flipped classroom.*

A side benefit of this approach as Noah notes is that flipping videos, videos for students to be watched at home, engage students at home with the content. It frees up the classroom time for the actual engaging instead of delivering the content. To him, flipping the classroom means that, "*students can demonstrate problem solving in there, so that's a benefit*". As a teacher, he is hoping to engage students and make sure that at the end of the day they can remember the four proficiencies namely, understanding, problem solving, fluency, and reasoning. In addition, flipped videos can help him to have a basis to start a robust discussion with the students.

Although he has found the flipped model a good and useful approach, he notes that the success of the approach relies on the calibre of the students as they need to engage with the material first. While some students have come to be "*spoon-fed*", and not engaging with the material, he recommends lecturers to apply this approach carefully, knowing how to engage students.

Despite the attention that the flipped videos get, he argues that the challenges could be around access, and finding if students are really engaging with the material. Contrary to the challenges, he thinks that not having online access or computers at home is rare in Australia. He states that,

> *Probably if students do not have sort of online or computers at home, whatever, but I think it's rare here in Australia.*

In addition, he states that,

> *Even if they [students] come to the class without being prepared, when you workshop that idea, it's much better than the lecture because they might not really sort of benefit 100%. They'll probably benefit 60%, which I think is more than what they benefit from a lecture.*

Barbara has noticed several advantages in running her flipped classroom approach. For instance, she likes the "*the slow pace of the video and the end summary*". Recently she

conducted a focus group with her students and found they responded favourably to the flipped classroom activities, particularly when they were studying for their examinations. The students said that,

> *They could actually stop the video and make sure they understood the concept that she was trying to get them to understand.*

Students would do a mind map of what she was talking about. She has found it a very effective learning strategy as,

> *They could stop the video, work on their mind map and then, keep playing that and pause it wherever they wanted to work on their mind map and then go back.*

She thinks that if the flipped model runs the way it's meant to, students could get a deeper understanding of the material and it's probably a more realistic representation of learning. More importantly, she asserts that as teaching teachers,

> *We can't expect students to sit still for an hour while you talk. It's boring. So maybe trying to model some of the approaches that they might use in a class to try and engage students.*

Regardless of the many advantages of this approach, she argues that "*the problem that we've found this year is that when we come to class we're just repeating content that has been delivered online so how do we move on beyond that*?" Indeed, she believes that she had fallen into the trap of revising the flipped video and not all students watched the flipped video. She spends ten or fifteen minutes going over the flipped videos in the classroom. The other challenge for her is with regards to pedagogy and the types of activities that are implemented. She likes to be quite creative and tries new things. However, at times this comes with challenges. Further, she states that,

> *The first flipped video took me a whole day to do, pretty much, if I add the hours up but then after that it's a lot easier.*

Another challenge "*a real barrier*" has been getting to know the software. Remembering what she has to do next time she uses the software has also been a challenge. By running the approach, she intends to have students develop a better and deeper understanding. However,

she is not sure how successful she has been with the new approach. She admits that, "*the first year subject is a high-fail subject*", and her aim is to reduce the failure rate.

6.3.1 A Synopsis of Interview Findings for Lecturers' Question 2

The introduction of something like the flipped video concept requires professional development around how to deal with the challenges lecturers have found. As such, some of the advantages as well as obstacles in successfully implementing the flipped model are highlighted below.

Advantages:

- flexibility for learners
- demonstrating problem solving
- deeper understanding of the material
- freeing up some of the lecture time, and contact time for lecturers
- freeing up the classroom time for responding to the needs of students and creating other things that the students can engage with
- having more time in the tutorial to do more of the hands-on with science equipment
- the opportunity to make changes to other aspects of a face-to-face

Challenges:

- the use of Camtasia
- Rigidity (clunky platforms)
- access to technology
- funding to access that technology
- mastery of technology
- keeping up with technological change and innovation
- the structure
- the pedagogy and the types of activities that they implement

In addition to the above-mentioned challenges, lecturers need to find out if students are engaged with the material. Indeed, students must have the motivation to follow the educational material provided through the flipped videos. Obviously students have the reading materials and the lecture notes, but giving them a flipped video to watch before coming to class, might give them a sense of what the content of the discussion in the class will be. In their university platform, it might be worthwhile to have the first screen of the video up for the students to click to start the video as that is what they are familiar with in the other technologies they use.

6.4 Summary

This chapter presented on analysis of the lecturers' qualitative data in response to the research questions for this part of the study. The next chapter will report on the qualitative findings of students' semi-structured in-depth interviews.

CHAPTER 7

STUDENTS' SEMI-STRUCTURED INTERVIEW RESULTS AND DISCUSSION

7.1 Introduction

This chapter reports on the students' qualitative responses to the interview questions. As such, it discusses the qualitative results from semi-structured in-depth interviews with students which were conducted to complement and clarify the data based on their quantitative responses to the surveys. This allowed for further clarification from the participants. Furthermore, it allowed the researcher to tap into their perceptions and understanding of videos utilized through the subjects they are enrolled in, their dominant preferences, and talent areas. In presenting the findings from the interviews, this section of the chapter identifies probable emergent trends. Like the previous chapter, data derived from students' interview excerpts are cited unedited and analysed carefully before the actual writing of the results. It should also be reiterated that all interviewees' names used in the study are pseudonyms and the reported students' excerpts are copied verbatim except where indicated.

7.2 Profile of Students

The total number of student interviewees were 13 and their demographic information is summarized in the following. Based on the data, 2 males (15.4%) and 11 females (84.6%) formed the sample of 13 student participants whose ages ranged from 18 to 46 years. The students are 2 pre-adulthood (15.4%), 10 early-adulthood (76.9%) and 1 middle-adulthood (7.7%). The interviewees were from different years of study as 10 of them were in the first year, 2 in third year and 1 interviewee was in the final year and they were enrolled as part time (N=4) and full time (N= 9) in both Education and Psychology subjects. A majority of respondents, 10 (76.9%), were studying 'face-to-face, on campus', while 2 were studying

solely online (15.4%), and only 1 (7.7%) of them was studying in 'distance with some face-to-face on campus component' mode of delivery.

7.2.1 Demographic information of the students' profile

This section provides a brief review of participants' profiles. The findings of interviews are then discussed thematically based on the research questions.

Ella was an 18-year old female student of the Behavioural Sciences. She was a first year full time, face-to-face on-campus student.

Maggie was a 29-year old female student of Educational Sciences. She was a first year part time, solely online off-campus student but before coming to this discipline, she had a BA in Sustainability. She is from The Netherlands and she also speaks Dutch.

Jack was a 28-year old male student of Educational Sciences. He was a final year, full time, distance with some face-to-face on-campus component student. He is from France and also speaks French.

Kris was a 28-year old male student of Behavioural Sciences. He was a first year full time, face-to-face, on-campus student.

Ava was a 39-year old female student of Behavioural Sciences. She was a first year full time, face-to-face, on-campus student. She also holds a Diploma of Counselling and Communication.

Yvonne was a 24-year old female student of Behavioural Sciences. She was a first year, full time face-to-face, on-campus student.

Katie was a 40-year old female student of Behavioural Sciences. She was a first year, part time, face-to-face, on campus student. She also holds a TAFE Certificate/Aromatherapist Certification. She is from South Africa and now resides in Australia.

Helen was a 28-year old female student of Educational Sciences. She was a third year, part time, solely online off campus student. She is from New Zealand and now resides in Australia, and also speaks Dutch.

Rena was a 19-year old female student of Behavioural Sciences. She was a first year, full time, face-to-face, on campus student.

Mary was a 30-year old female student of Educational Sciences. She was a third year, part time, face-to-face, on campus student and she holds a Trade Certificate.

Kasia was a 28-year old female student of Behavioural Sciences. She was a first year, full time, face-to-face, on campus student and she holds a Diploma Remedial Massage, Diploma Beauty and Certificate iii Business Administration.

Chiara was a 24-year old female student of Behavioural Sciences. She was a first year full time, face-to-face, on campus student and she holds a Diploma and multiple certificates.

Olga was a 46-year old female student of Behavioural Sciences. She was a first year full time, face-to-face, on campus student. She also holds a Diploma of Nursing.

According to Tapscott's (2009) classification, most of the participants were Net Geners (n=11, 85%) and the remainder (n=2, 15%) belonged to Generation X. Table 7-1 also provides a summary of students' learning mode preference, their internet usage frequency, resources that they have found useful in their learning, and their access tools. As presented in Table 7-1, most students (n=10, 77%), regardless of the year of study or discipline, would prefer to study in a blended mode of delivery. Two of the students were interested in face-to-face (15%) and 1 (8%) in online mode of delivery. It should also be added that the students interested in the face-to-face mode would enjoy the blended mode if lecturers were well trained. For instance, they enumerate interactions with their lecturers and peers, getting immediate response and feedback to their questions, hands-on activities, getting a better insight into the subject, and support for people with learning disabilities among the reasons of their interest in a combination of both online and face-to-face approaches.

Jack, the only student with a preference for the face-to-face mode of delivery, thinks that his tendency towards the blended learning mode relies on the efficacy, expertise and technology literacy of the lecturer. Working full time, Helen could not attend the university and thus she is studying online. However, she states that when she has been able to come to the university and talk to the lecturers face-to-face, it has provided her with a little bit more content because she could take it a little bit further than when she is watching a lecture or she is emailing questions to her lecturers. She acknowledges the blended learning mode has advantages although it is not her personal preference.

Table 7-1: Students' learning mode Preference and Technology use

Name	Learning mode preference	Frequency of internet usage (h/d)	Tech & ICT use Useful resources & tools	Access
Ella	Blended	5-6 hours	Blackboard, One Search, Lib Guides	Laptop iPhone
Maggie	Blended	half a day	Search engines, YouTube, Blackboard	Laptop
Jack	face-to-face (Blended learning is efficient if the lecturers are well trained)	2-3 hours	Blackboard, YouTube, the ACARA website, GES, SCOOTLE, Google search engine	Laptop
Kris	Blended	1 hour	Google Scholar, Blackboard, Online dictionary, Google search engine, YouTube, Duolingo (German language Learning application on his iPhone)	Laptop
Ava	Blended	At work, probably only an hour and a half, but at night and when studying, easily 4 hours	Lib Guides, Blackboard, Library Chat, YouTube, PowerPoint, Googled dictionaries	Computer (I know I can do them on my phone and stuff like that, but I find it's just not very helpful).
Yvonne	Blended	at least 2 or 3 hours	Google, Google Scholar, The One Search, Blackboard	Mainly laptop (I don't do it on my phone or my iPad. I don't think they really work on your phone or your iPad).
Katie	Blended	about 3 hours a day, while studying for exams, 4-5 hours	YouTube, Blackboard, One Search, Google search engine, Google Scholar, some apps on iPhone to learn mnemonics for psychology or different things like that	Laptop
Helen	Online	At least 6 or 8 hours	Blackboard, One Search, Blackboard (having the Blackboard on her iPhone and her iPad, has made it a lot easier and quicker rather than going into the website), the Library Guide, the reserve online, the Camtasia	Computer Laptop iPhone iPad
Rena	Blended	Not any fixed time (from a few seconds to a few hours)	Library site, Blackboard, Google Scholar, Google search engine (if she can't find something in the library)	Laptop Computer iPhone
Mary	Blended	1-2 hours	Google, Google Scholar, Library site, Blackboard, Wiki, Google Wiki (to make our own Wiki sites)	Laptop
Kasia	Face-to-face	one third of each day	Google Scholar, Blackboard, the library site, One Search, MyPsychLabs, Wikipedia, Search engines (when everything else fails)	Laptop iPad
Chiara	Blended	4-5 hours	Lectures, Worksheets, PowerPoints, etc.	Laptop iPhone
Olga	Blended	2 hours	YouTube, the library site, Blackboard	Laptop Computer

The majority of the students (n=11, 85%) were mainly watching videos on laptops. The remaining were accessing videos through computers (n=2, 15%). Eight students reported using their internet usage for less than four hours a day (62%), compared to 2 students who used it for less than six hours (15%). Three students (23%) used internet for more than six hours a day. All students had access to the internet at their home or their phone (100%).

7.3 Perceptions of the importance of online videos and their subject engagement

This section reports the findings for **Question 1**: *How and why do students use online videos and how do they influence subject/course engagement?* As detailed in Chapter 4, thirteen students' transcripts were segmented into codes and the findings from the relevant categories to the question are presented below.

Ella looks at videos as being a different way of learning from face-to-face, reading from a text book, or reading online. She believes that the content of some of the videos was not appropriate and was not relevant for their subject assessments. Sometimes videos have motivated her and made her more interested in the subject as "*it shows what other people can do and then gives you a bit of ambition to be able to complete something yourself*". However, she admits that she doesn't watch the videos whenever a new one is posted. She only watches the topics that intrigue her. For example, she adds that,

> *There was one about a lady and her brain and that interested me because she had aneurysm in her brain and I thought it was interesting how she could be completely functional and talking again as an expert when she had had this aneurism. It was two or three years earlier, so I found it interesting, her transition and her recovery.*

She needs videos to be interesting and related to the topic in order to engage her with the subject. She reasons that she will learn more if the video is useful and interesting. She adds,

> *If I have more of an enjoyment while watching the videos, I'll take in a lot more rather than if it's a boring one with a monotone person speaking.*

Further she provides an example where fun has been incorporated in the subject. She gets cat memes posted by a lecturer on the subject's Facebook page.

Maggie would love to see more online videos in her subject. She would prefer longer videos rather than just having quick overview ones. She thinks there needs to be all kinds of different ways of learning because of the diversity of delivery modes. When she looks up extended information about some topic that she is stuck on, she finds watching a video aids her learning. She thinks having someone talking and explaining the concepts in the video help engage her and motivate her to learn. She would like to have a range of short and long videos as she thinks the shorter videos could save time for busy people, while the longer ones could be used by students interested in extending their learning.

Jack has found good quality videos on ACARA on how to apply the theory he is learning. The subject videos have been properly linked and clearly related to the topic. Although videos are a good learning supplement, Jack doesn't think that they increase his interest in the subject. He states that "*sometimes I love subjects and sometimes I don't like them and I'm not sure that videos have an impact on this*". He thinks that he is more engaged when he watches online videos than other things. However, he believes that they need to have a purpose, be of good quality, and be linked to the content. Otherwise, he might not get engaged with them. In this regard he states that "*sometimes lecturers put videos but they don't explain why we should watch them"*. Further, he adds that videos must be to the point too.

Kris thinks of videos as having another opportunity to have something explained besides the lecturer or the tutor. He can replay and pause the video as many times as he wants until he gets the point. He thinks that the videos are very concept specific so he notes that,

> *it's something that perhaps they could spend half an hour in the lecture explaining or they could just post a video that you can watch in your own time to understand a concept or a theory or something like that.*

He is not sure if this university is doing all that it can to engage in interactive learning, but he thinks that he chases up his own version of what he needs through searching the internet. He notes that if he doesn't understand something and he is having trouble reading it in text, he will tend to just move onto the next topic without trying further. However, he thinks that,

> *When you have the option of watching a video and it explains it very clearly, it makes it more interesting because you can connect all the dots and you can make a big picture out of it. And then once you have that big picture, it makes the whole subject interesting because it ties everything together.*

He thinks that a video could motivate and engage you as far as understanding the concepts and getting involved. It provides motivation to learn more and to research the topic. He argues that lecturers could make more of their own videos and make them more specific to the topic. He also adds that,

> *If they provide a link to a video I'll watch it but I'll also find my own version of it and research what interests me to do with that concept.*

For Ava, watching video lectures are easier than just the voice lectures. She adds that she is obviously a visual learner. Ava would watch videos that night if she feels motivated. In addition, she states,

> *Videos have their dynamic. The pictures will change quite quickly and they use a lot of transition or multimedia snapshots of colours and stuff like that and again you've got lecturer's voice or the tutor's voice, and then you've got someone else's voice, which makes you engaged.*

Further, she notes that there usually is a bit of music before, during, and after the content. You'll notice quite a few of the videos have something like a ping or there'll be sounds that change with a different diagram. A lot of the videos very cleverly change the music. Videos tend to deliver information quickly and are quite relevant within a small snapshot where you can then either take notes, or retain the link for later on if you want to reference that again.

To address their perceptions and encourage their engagement, the lecturer in Statistics has provided sensible pieces in the form of a lab report, and multiple choice questions to help their learning. However, she thinks a brief expansion on why the lecturer thinks it's relevant, not posting too many videos, and not posting lengthy videos are other factors that might impact on her engagement with the subject.

Yvonne does not think that online videos alone could be helpful as students need human interaction as well. She thinks that videos in combination with some human interaction could be a good learning supplement. Video integration has enhanced her learning as she has been able to pause and take notes. She adds that,

> *I like to write things out by hand more than type things, but in a lecture I have to type because I can't write that fast. And then you miss things because you're focusing on typing what they've just said and that is a bit confusing.*

With the podcasts she can pause them, write down notes in her own words and then continue listening. In a lecture, she is writing down lecturer's words because she does not have time to translate it into her own words. She thinks podcasts allow her to immerse herself in the material. In the subject, they basically go through a different topic each week and the podcasts for that topic only focus on that topic for the week. The lecturer does not go outside of that and sometimes she refers to something that they have learned the week before. Yvonne thinks this is good because it integrates the material for them. Relating the podcasts to each other helps students to stay on schedule and learn exactly what they are meant to be learning for the week.

Video integration does not make her more interested and motivated in the subject as she enjoys the tutorials a lot. Yvonne thinks she probably would be more interested in the subject by doing the hands-on aspects than just watching videos. Yvonne thinks that the lecturer could encourage her engagement by being more enthusiastic, while making the videos. Further, she

adds that the videos should be focused on the material, not going off the topic. Accordingly, she states that the lecturer has to separate the context, only focusing on one point each time instead of covering three or four different points. It allows the student to be able to watch the video when they want. If they need to go back and refer to the information, they only have to go through ten minutes rather than trying to go through 40 minutes and find the bit that they have missed. She believes considering these criteria could make videos perfect.

Katie watches videos only when she is studying for examinations as they help her to remember specific things about what she has studied. She thinks videos, rather than a journal article, could be a good learning supplement as they add to your personal experience. In talking about her experience with the videos made by the lecturer, she adds that the videos went over the subject matter each week and the lecturer didn't have anything beyond the lecture slides. Katie argues that "she'd have it going as a PowerPoint, and then she'd have a link to the website, and then she'd press it and go into the website, and show students something for five seconds". Further, she adds that the quality of the recorded videos was very bad.

However, she believes that videos aren't her source of motivation as she comes to the university to learn. Her motivation is intrinsic and not because of the videos. She doesn't know whether she likes videos very much. If anything, videos force her to do the work every week. She often thinks that "*it's valuable time that the lecturer has stolen, and looking at videos and things like that, I think I can do that on my own, without somebody*". Further, she adds that,

> *I'm particularly here in the university because I need to do something face-to-face. So, I wouldn't say the videos keep me motivated.*

She gets a feeling for different things by looking them up on YouTube as they engage her learning and provide her everything that she wants to know. She admits that videos have definitely engaged her in the subject, and have made it more interesting.

Helen personally feels that videos have reiterated to her certain topics, certain issues, and material that she wouldn't have picked up otherwise. She thinks that the way the lecturers, especially this semester, have used the videos to reinforce this particular topic, have been very, very clever, and she has enjoyed that even more than the lectures. She assumes that videos show other world views. According to Helen, those students who have skipped a lot of the lectures and a lot of the video content that's been uploaded have not got marks as high as she has. She states "*I found videos more engaging*". She has found videos interesting and relevant for assessment items. She thinks the videos were chosen very well for their content, and this was never in question. She states:

> *When it comes to the supporting videos that the lecturers provided…but it provided you with a little bit more insight into issues that were outside of the subject as such. But it still was relevant to the subject as a societal subject.*

She notes that if you have got supporting materials from different viewpoints of the topic, you get motivated to explore those topics a little bit more, rather than just taking for granted the assumption that the lecturer knows everything. For this reason, she thinks that her motivation was increased, but probably not so much for her engagement. She admits that she has got engaged more with the subject this semester probably because its applicability to fourth year studies has been made clear. She believes that this semester in particular, the lecturer utilized ICTs very much. She thinks that it has engaged her a lot more over the last year, and she thinks that her results would probably correlate with that easily. So, she admits that "*they've definitely improved engagement by having those videos*".

Rena has found videos a good learning supplement as they explain things in a different way to the lecturer, or the text book. Sometimes students need another explanation to try and fully understand the topic. Sometimes videos elaborate on something that she has already been through.

To her, the content of videos used in the subject were appropriate and she really likes an animated video scenario. She thinks that she has definitely got into the subject more than she has with her other external subjects that have used podcasts. She thinks that,

> *If you're just doing an external subject, you don't get that interaction with the lecturers and your peers like the internal ones; so the videos and that sort of stuff are useful.*

However, she has found her internal subjects are not supported by any type of videos or podcasts, and therefore she has found it difficult to recall everything that's happened in the lecture. Using podcasts or videos have given her the opportunity to go back through the content and thus she can review the material at any time. She can easily go back to them if she misses something. Videos have helped her to get engaged more with the material and the subject. Accordingly, she states that,

> *I've got my earplugs in and I've got my notepad and I'm taking down notes and I'm understanding this and that makes sense.*

In addition, she states that the lecturer uploads videos prior to the session and so that helps them understand it better. However, some other lecturers don't do that at all. To her, getting emails from lecturers stating that "*there's a video up there. Go watch it*" doesn't motivate her to do that.

Mary watches videos as they aid her learning. To her, sometimes there is a lot of information in a lecture so when she gets home she can go back and see the videos and refresh her memory. Through videos she can get a bit more in depth knowledge that can be used in the tutorials the next week. Watching videos aid her learning. She thinks the purpose of watching videos is more about getting a broader view that helps students to see what is actually happening rather than just reading pages and making an assumption in your head on what it must look like. Students are seeing it in real time which inspires their motivation and engagement with the subject. She admits that "*she is very engaged*" and she believes that videos give her another

medium to be able to get involved and engaged with the content of what they are learning. She also adds that with

> *Academic papers you can get lost in the words. So watching it you cannot get lost as easy.*

She thinks the main thing that needs to be done is that,

> *It needs to be revisited during tutorials because if it's not revisited and discussions are not made around the videos, I'll just stop watching them. Because it's just like reading, then they put extra readings up. If they are not going to discuss it, I'm not going to read it until I do my assignment and find the words within the reading to use.*

She notes that the video content is not reflected in the tutorials. She also adds that because of having dyslexia,

> *I sometimes get overwhelmed by all the readings and I feel that the lecturers are so in depth into their academic writing that they forget that a lot of us don't have our normal way of reading and viewing things*.

Consequently, having visuals breaks down that academic writing and thus students can make more sense of it.

In providing students with a good example of a concept from the text, Kasia believes that "*a lot of time they put you into context. For instance, some of the online videos that I've had for psychology would give you a real life condition that we were studying about*". Videos on memory impairment have shown us how those people interact with others in the environment and additionally have included their doctors speaking about the parts of the brain that were damaged and how that would affect them. She thinks the content of the online videos were appropriate for the topic being studied. She thinks if videos were provided every week, for the lecture that was being taught, then they would really help her in completing the subject successfully. Talking about her learning experience with online videos, she states that,

> *The way that I learn, I can read it and I can be told it and then I need to put it into a real life situation; so that, I can understand it. And online videos do that.*

Because of being helped to understand the content, she thinks videos then make her motivated, confident, and also excited. She also adds that because videos break a two hour lecture of just someone speaking up the front, they make the lecture less boring and enhance her engagement with the subject. She believes that the lecturer could also encourage their engagement with the online videos by stopping the video at some points and asking a question such as, "*what do you think that they're trying to do here*?" or "*can someone tell me what part of the brain would be damaged here if he's acting like this and what is typical*?". She thinks that it is great to have questions rather than just expecting students to watch the video as they might miss points. Accordingly she states that,

> *It is engaging and even if I didn't know the answer to the question someone else might have pointed that out and it is interactive learning.*

Chiara feels that watching the videos have given her a much better, firmer, and deeper understanding of what the entire subject would be like, than just reading about it in a text book. Videos have provided her with more engagement and motivation with the subject and she thinks it is better to have more videos as she has found them "*a great explanatory tool*". She feels that the younger people engage better with videos. Further, she asserts that videos have enhanced her learning experience and they are helpful for completing the subjects successfully.

Olga feels happy about the video content and their appropriateness to the topics that they were studying. Videos have helped her to enhance her motivation and engagement as they provide her with understanding and aid comprehension of the concepts and topics. In clarifying this, she shared the experience of a video on lifespan. With the help of the video, you could see that the baby has no concept of fear at a certain age, then as it develop, you could see that the baby began to show fear because "*it was going to go over into a cliff or it looked like the floor had dropped away*". The baby understood the fear factor it didn't have earlier on in its infancy.

Accordingly, Olga could see the development of the child and the fearlessness that it did have prior to that through the video.

7.3.1 A Synopsis of Interview Findings for Students' Question 1

The results of this question demonstrated that the videos were perceived to be beneficial for students in various respects. First, videos were found to be a useful stimulus in students' engagement and motivation. The results also revealed that interest plays a major role for students who are keen to watch the topics that intrigue them. Based on their responses, it seems that they were dissatisfied with monotonous video lectures that failed to make their learning interesting. Second, it seems that students are no longer interested in too much reading, and prefer easier and less demanding modes of learning, i.e. watching videos which denote a change in their desired mode of internalizing knowledge to an easier one.

Desire for brevity, conciseness, and to the point videos with no additional materials were also found more attractive and engaging for them. They enjoy the flexibility to be able to watch videos with no time and place restrictions and thus they mostly have become less field independent. Further, variety is perceived to be important to Net-Geners in particular, and music and visual aids seem to be their preference and a significant motivational stimulus. This issue taps into the notion that students' different learning approaches might be based on their multiple intelligence strengths.

In addition, animation and simulation make their learning easier because it is in the form of a film and does not need too much concentration and reading. They like cognition forming and cognition sharing as a team work strategy and have the higher stimulus of interactive communication. Likewise one of the students stated that the younger people engage better with

videos. This is what Tapscott (2009) attributes to gaming and Net-Genrs desire and expectation for speed and immediacy and their visual skills that make them superior scanners. They need things to be quick and a short video meets this requirement. Sources of information and perception of authority figures have also changed for Net-Geners. Lastly, it seems that videos could be used as new modalities for changing the life for people with various learning disabilities.

7.4 Perceptions and experiences towards the educational value of online videos

This section reports findings that address **Question 2:** *What are the students' perceptions of the educational value of online videos and their learning experiences within the subject?* It includes the students' perceptions and attitudes towards online videos. Specifically, it addresses students' views on the benefits, and challenges of their use, along with any positive or negative suggestions regarding their experience of the technology.

According to Ella, videos have given her a different perspective on life and have provided her with the opportunity to look at different examples from around the world. She believes that blended videos have helped her to understand the reality of things. Hence, she can see that they aren't always black and white and there can be a different side to the story. She has found that,

> *If lecturers have different videos involved with the lectures, it would, obviously change the point of view of a student that can* be *sitting there, pretty bored and not really interested.*

In addition, she thinks that videos can be more beneficial for those students who cannot attend lectures all the time, but can have access to the internet. To her, videos have to fulfil a motivational need. She posits that she will learn more if she experiences enjoyment while watching the videos. She will take in a lot more than if it's a boring one with a monotone person speaking. In those cases she will tune out if it is not very interesting. She thinks that it's helpful

to have a podcast as students can then go back if they have missed something or pause it or fast forward it. For example, she suggests that,

> *If there's different ways that you can learn, like different pop ups, either pictures or links to videos that can be connected to it and that sort of thing, it relates to your topic, it'd be interesting that way.*

Also she believes that she would be more intrigued if there was an image that was related to the topic and could provide more information. She also thinks that if posted videos provided a context, even if taken out of a book, it could help her to understand the meaning. In other words, she is interested in having a little note on what the videos are beforehand. For example, an explanation about what the video content is and maybe more notification as to where and when it's going to be put up. Exemplifying the suggestion, she states that,

> *Like, if it gets posted on the Facebook page, it's then linked. It could also be put onto [Blackboard], for example, for those students that probably don't have Facebook, which is a very rare occurrence, but, you know, a student that doesn't have Facebook can then still access the videos.*

Ella also admits that sometimes videos weren't functioning 100% properly. In addition, she cannot access videos from her phone while she is out or she doesn't have her laptop nearby. Using her phone, she can easily access the videos on Facebook, but it is difficult to link it towards something else. Other than that, she is happy with the nice and simple setup and the videos.

Maggie has found videos really beneficial. They make her more interested in the topic. They help her to engage and understand the material. She is "*very comfortable with videos*" as she can rewind them, pause them, and go back to them whenever she needs to. She thinks videos are really good as she can come back to them to take notes, and she can source similar videos externally where she can look up more information. As an online student, Maggie believes there are certain things that they have to engage with in order to understand the material and there are many questions they might have. Therefore, having a lecture format video could help

explain things a bit better. She suggests having more lecture-type videos, not just an introductory one. She needs to watch more about the content as they don't get that face-to-face session. She is not sure if the introductory videos overwhelm people or if they are needed. She asserts that,

> *They need more that lecture type thing so that they can understand what they need for the exam, what they need to understand.*

As the lecturer uploads videos on his YouTube private channel, she hasn't experienced any difficulties regarding the video access as they can reach them from anywhere. Furthermore, she notes that YouTube supports most devices. Thus, she can access videos from her phone "*anyway, or anywhere else*".

Jack has experienced several advantages of integrating videos. For example, watching videos have helped him to remember things better. He states that,

> *I remember for, when we were doing educational psychology you need for the exam to remember a full list of theory, and then videos were perfect for me because I could remember the theory really easily by watching those three minute videos that would explain each theory in three minutes.*

Accessibility is another advantage of videos. He feels that if he doesn't understand a concept, he can review the video several times for a better understanding. It also provides him the flexibility to watch videos anytime and anywhere. As a visual learner, he has found videos beneficial for his studies.

Jack would prefer to watch videos created by the lecturer as they fit the subject perfectly. Other videos, such as YouTube, can then be used as a supplement. He likes to see the introductory video. He looks at the five-minute videos as an overview prior to doing the reading. He believes this is a more efficient approach for his learning. He states that,

> *If I have 20 or 30 minute videos, I have to replay as I get distracted. I start watching the phone. I start looking on the internet at the same time and I'm losing concentration, things that don't happen to me in reading.*

With regard to the quality of videos uploaded or created by the subject lecturer, he thinks it's important for them to think carefully when shooting a video and try to create a good quality one when they are recording themselves. If the quality is poor, students may give up watching the videos as interest is limited. He also adds that,

> *You can see lecturers that record themselves and they most use very old technologies and then the sound is not in good quality then it's getting a pain to understand them.*

He thinks videos should be there as a supplement that takes them deeper into the subject material. He believes that "*the lecturer should still be there, should still give his lecture every week or record himself*". He doesn't think that videos like the TED talk or the YouTube can replace their teaching. Thus, he argues that,

> *I'm paying money to learn and I'm not paying that amount of money to learn from YouTube. I'm paying that amount of money to get a teacher that sets up his own content because he's been qualified and he needs to, it's my belief.*

He also shared a previous experience in another subject, where the lecturer had a list of YouTube videos and a list of articles for students to read with no contact and response from the lecturer. He was quite upset about this situation as he could do it on his own from YouTube with no cost. He further noted "*if you're getting upset and disappointed you won't have a good feeling that you have learnt properly*". He also confided that a few of his friends have had internet problems depending on the place where they live. Although it works perfectly for him, the internet speed has affected the downloading of the videos and has been a challenge for them.

Videos for Kris work because of the extra explanation of the concept or the theory, particularly if it's an intricate one. He likes the idea that he can have it explained several times but he notes

that the videos could be "*tailored to actually our learning*". Flexibility to be able to watch videos at his own time and pace is another benefit that he has experienced. To him, online videos "*can lead to outside research*". "*When you click on a video, for instance on YouTube, it presents other options for other videos into different theories and concepts*". This adds interest for him. Overall, he thinks that,

> *A video that's made with a certain class in mind based on a psychological topic in this case, and it was done really well, I think there are things to be benefitted from that.*

He believes that videos could assist students to be more successful in subjects. As individuals learn differently, the use of different interactive learning content can cater to students' learning abilities. For instance, he finds his PsychLab quite useful because "it explains the concept and it does make it interactive". To him,

> *It's almost childish in the games they use, but there are little games where you've got to put things together. And it's surprisingly effective how it gets it. It sort of implants that information in your mind through that little game or whatever, the interactive learning content.*

To him, the challenges are mainly around the length of the videos and he admits that he cannot keep his attention for such a long period of time. He argues that sometimes he cannot watch videos because the required platforms are updated and the videos won't work. This issue is more technical and thus, he had to brush up his computer skills on how to update the required apps such as Adobe flash player and Quick time. The technical issue has forced him to improve his computing skills and consequently, he has learned all these different Java platforms and things which he didn't know before, and has also learned how to update them to be able to receive videos. As such, he states that,

> *I can't just go to a computer shop so I've actually had to work out exactly how to update a flash player, and now I know how to do that and fix problems I guess.*

A side benefit of videos as Ava notes is that you can access them anytime and anywhere. If you want to go back to them at any time, you can. As a lot of videos were linked through to

YouTube, she could easily like or bookmark them for later. She believes that the video integration has provided her the opportunity to see learning on different dimensions. To her, this means that,

> *Everything from a textbook is great, but most of us now use multiple technologies to connect with family or friends alone, so using something that you'll find suits you more often.*

She also thinks that as we move into industry, we are going to face technology in our work environment. For instance, she states that "*we have training videos at work which help do stuff like that*", so she believes that we need to get used to technology as well. Furthermore, we can capture information a lot quicker through a visual aid rather than just writing pages of information. Hence, she adds that,

> *A lecturer is one, because it's a way, but then when you're using visual, vocals, and music or pings or something to draw your attention to certain things. So it's using just multidimensional.*

She also has found videos helpful in that they have shown pictorial representations of the historical material. She appoints that if you are talking about "John Locke and Hume", for instance, having a visual aid around would be helpful as it shows you what it was like in John Locke's era.

Ava thinks having some captions, multiple choice questions, more explanatory notes, or greater opportunities to discuss the videos would be helpful. For instance, having questions at the end of a video would make it interactive and "*stimulate discussion around that throughout; whereas a couple of them would just present information*". They would also help learners to determine whether watching the videos is part of their assessment. Other links to YouTube videos would also be helpful.

Ava found the videos posted and the links for appropriate. All the YouTube links on Blackboard were free. However, students also needed to get access to MyPsychLab where there were dozens of videos. Unfortunately, they couldn't access them unless they purchased the access to log in. She thinks there are probably better ways to deliver videos as she argues that,

> *once you had access to MyPsychLab, you weren't really directed on there what would be most relevant for you for that week, and yet they'd all said, purchase MyPsychLab at $180, and so you just had quantity.*

She knows some students didn't look at the videos as they had no access to MyPsychLab through Blackboard. As this is a first year subject, putting five or 10 relevant videos linked into Blackboard would overwhelm her. Moreover, she adds that finding quite relevant and similar videos on YouTube could not be possible without having access to MyPsychLab and spending an hour or more to find similar videos. Another challenge has been with regards to the odd broken links. She thinks the lecturer uploading the video should have checked the link prior to uploading onto Blackboard.

Yvonne finds online videos easy and enjoyable because she can pause or rewind them and take notes, rather than sitting in the lecture room and trying to write and listen. She admits that she is not very good at listening and taking notes, so it's good to be able to pause, quickly write something and then play it again and then continue; whereas in the lecture, she cannot do it at the same time. The flexibility to watch videos on her own time is another advantage. As for a lecture, she needs to attend it physically at a scheduled time, whereas the videos have provided her the opportunity to watch them at her own pace and the time that suits her. In addition, she states that she is a full-time student working casually. Thus, she has to attend the lectures and tutorials. However, with the online videos, she can do it outside of work and classroom. For example, she states that,

> *When I have two hours spare I can go and sit in my office, close the door, make sure there's no noise, no-one around me and I just sit and I watch and I can dedicate*

> *two hours or whatever it takes to watching a video, taking notes and learn it. I think that's good.*

To her, using videos to complete the subject successfully depends on each individual student and their learning style. She thinks that,

> *Some students can just sit and read a book and know that's all they have to do and they know it, and they walk away and they can do an exam. Other students need online videos and interactive models and all that sort of stuff, which is probably me.*

Because of such individual learning differences, she appoints that "*I don't think you can set up a specific learning task for hundreds of students*". Thus, she believes that universities have to provide everything hoping that students can find their own pathway to learning although she believes that "*they could be used to a certain extent with every subject*". She can sit in a lecture and listen and learn a little, but she believes that she definitely doesn't take away enough. She thinks it is good to have something that she can definitely go back to, a video or a podcast, of being able to listen to it again and take notes. It makes it a lot easier to learn.

Yvonne thinks videos should not be longer than ten minutes. The first video uploaded by the subject lecturer took about 40 minutes to watch and it was too long to capture the attention of students. It has led her to stop the video and walk away as the lecturer was trying to do too much at once. Likewise, she thinks that,

> *The shorter videos just touch on the one topic or otherwise, not to pay attention too much to listen to 40 minutes all at once.*

Yvonne also argues that she could see the lecturer is just sitting there with no facial expression, just reading off a piece of paper when doing her podcast. She adds that,

> *It is a subject that I have to do as part of my course, so to make me interested in it, I need someone to be a little bit more exciting.*

As one of the main priorities she thinks the lecturer needs to ensure that students are aware of the time that videos are going to take to be uploaded or how long they're going to be online.

She admits that "*we don't really go looking for them. We're pretty lazy*". Although there haven't been any glitches with videos, she argues that sometimes videos were very monotone and boring and they put students to sleep. Further, she adds that she cannot concentrate if the video involves just the lecturer speaking in a monotone and there is nothing exciting about it. Accordingly she states that,

> *When you're sitting in an actual lecture there's stuff going on, like the lecturer is there walking back and forwards, they are talking, they're enthusiastic, so it gets you interested. Whereas when you're just watching a video that's not really that interesting in the first place, it's hard to pay attention, so it's hard to be involved in it.*

She thinks that recording a video just by the lecturer sitting, looking at the camera, and reading off a script might be boring. She also states videos don't work on her phone or iPad. Hence she recommends having the videos more accessible in some way.

According to Katie**,** videos engage her in the subject. They give her a human view, and sometimes she has found them very educational and provoking as they make her think. The videos that she has found work the best are specific to the actual area of study that she is doing. For instance, she recalls a video about the brain in which the lecturer showed specimens, real ones, revealing how things in our brains work together. Thus, it brings a sort of perspective into what she is studying and also makes it interesting. However, she believes that using videos in the subject is "*just a matter of finding things, time wise, and being more capable with that kind of technology*". She notes that for the previous semester, instead of having lectures, it was all podcasts. So, she adds that they were told on the first week that this is how it's going to be. To her, podcasts were really boring and there was nothing interesting about them as they were just hearing a voice "*which wasn't a very nice voice, and nothing extra, just the PowerPoint, the whole lecture*". She believes that the lecturers need to do it more interesting as students are not at the university just for online learning. They are there to have a lecture. She would prefer

videos to be interactive and relevant to what they are studying. She generally has had no issues except the internet connection. She also suggests that the videos need to be more interactive. She appoints that,

> *If you're an educator you have to find things that are out there, or create them yourself, so I suppose to create them yourself you could do that the easiest possible way by getting your students to do different things, as assessments. It's a lot of information, and if you are a first year, kind of, lecturer you are not going to get it right. Well, I think that a lot of people who have been doing it for 30 years, they don't make an effort, and it's probably time that they retired.*

According to Helen, a huge benefit of online videos is that they provide her the flexibility and also give her the opportunity to refer back to what's being said by the lecturer. She can't see she would be able to take notes in a lecture hall and get everything that the lecturers are saying. Working full time, she can also use her lunchtimes to set up her iPad in order to watch videos for an hour. She adds that,

> *Even if the lecture is two hours, then I could stop it and then when I got home, I could watch the rest of it. Or, if I was lazy, I'd wake up in the morning and watch the lectures in bed, instead of watching the news; or folding washing... being able to watch those lectures or the videos, just doing housework with my iPad' walking around. And so I've enjoyed the flexibility, and definitely being able to refer back to it.*

In essence, videos support her understanding of the topics. To her, not only do the videos of the lecture/tutorials support her content knowledge, but the videos that accompany those lectures aid her in developing further knowledge on the topic. For example, she states that,

> *The lecture material/video will focus on a specific topic such as Indigenous Futures within the curriculum; however videos from YouTube will provide further knowledge as the current status of Indigenous Australians and the reasons why they require incorporation within the curriculum.*

In addition, she finds that visually it makes her think about the topic a little bit more, or deeper than if it was just listening to them with no pictures. She also adds that it is a little bit more interesting watching the videos, than just listening to them or reading Power Point presentations as they can be a bit boring at times.

She likes the way the Camtasia feature was used as well as YouTube, and the lecture recordings.

However, she thinks that videos should be scrutinized and appropriately picked. She also notes that,

> *There shouldn't be an over-abundance of them, because then you would get a bit disillusioned, or you wouldn't have the time.*

Accordingly, she adds that a lot of external students, or even internal students who have taken an external subject, usually do it because they're doing their flexible sort of living. They're either working full time, or they've got kids, or they're doing something else as well. She thinks videos need to be definitely picked carefully.

> *If you put a large amount of videos on there that are quite lengthy, they won't get watched and they'll be superfluous. You won't really require them.*

She also likes the fact that videos have relevance to the subject, but also take her away from the subject and beyond - they "*open a world view, rather than just one focus sort of tunnel-view*".

As an online student, Helen recommends that there shouldn't be more than three accompanying videos to a lecture, per topic, per week. She would prefer to keep it quite limited, just to reiterate the topics for that week and to engage students a little bit more. She knows that a lot of other students wouldn't watch videos. So, to engage them a little bit more, she suggests to have quizzes or questions at the end of the Camtasia videos. To her, presenting and uploading videos in a more timely manner would be an improvement which would facilitate further engagement. She notes that there has to be a motivation for students to engage with videos. Although she has got engaged in all the videos presented, she knows a lot of her cohort have not watched the videos. Apart from the above mentioned suggestions and benefits, she has also experienced some issues. For instance, the videos were not uploaded in a timely manner to aid her learning

style as she has had to juggle time restraints. Further, when the online videos have been presented, sometimes the voice recordings would not be adequate and she would miss some of the content.

Rena enjoys the flexibility that videos provide in her learning ability to go back through the content and review at any time. So she states that,

> *If I had just gone to the lectures, I don't think I would have understood it as well as I hoped.*

Rena thinks the online video scenarios are a lot different to just having a written scenario. Students interact more with the topic and they understand it better. She thinks having online videos in the subject has made it a whole lot easier. She believes the visual and auditory people take more advantage of videos in their learning. She adds that,

> *Real visual learners don't really cope that well going to lectures and just listening, and writing. I feel like they could be better off if they had that sort of visual material, like online videos.*

To her, videos are fine and she likes having more videos (three or four) on different topics. She is also apprehensive as to whether the videos can be downloaded. She thinks if she could download them, she could keep going back, and watch them whenever she wanted. She thinks a video might be able to explain the concept better while enjoying it. However, she would like the lecturers to interrupt videos by embedding a slide for instance, to ask questions. So that, they can have more time to look into the content. Further, she suggests lecturers provide a direct link to the videos instead of "*having too many different file types to go through to find them*" which could be confusing. Having a list of folders uploaded on Blackboard, she asserts that "*when I got to open [it] up, I didn't feel like watching anything*". As the internal subjects don't have any sort of videos or podcasts, she has found it hard to try and recall everything that's happened in that lecture. She admits that she is "*a pretty fast typer*", but as she states,

"*she can't type everything*". YouTube videos have all been fine. However, she had laptop issues in watching them online.

A side benefit of videos as Mary notes is that videos give a picture to the context. Watching a video helps her in getting "*a bit more in depth knowledge*". She acknowledges that she has got dyslexia and thus she cannot read pages and pages of writing as it gives her really strong headaches. Thus the visual aids provided through videos have given her a real meaning to it all as they suit her learning style. She also thinks of the advantages in terms of the subject. She states that,

> *It definitely works with subjects. It really makes you see other people's point of view and it also almost opens a gateway that you go and explore more videos around that. With readings you don't tend to…you just do the reading and move on whereas when you see the visual things you think I wouldn't mind seeing more videos of that.*

For her, if it's a YouTube clip and they've got other related topics around it, she might click on more of them and quite enjoy doing it. According to Mary, all lecturer's videos are pretty good as long as they are followed up with tutorials. She admits that,

> *I think that's a really good learning tool and it's a good way for assessment to use it.*

She thinks a challenge would be around internet access at the university. She notes that she has experienced Wi-Fi disconnections all the time. Thus, instead of doing any of her ICT at the university, she would prefer to do it at home because of the better connection. Although she could overcome the challenge by having NBN (National Broadband Network) at home, she imagines that,

> *A challenge for a lot of students who haven't gone onto the NBN yet would be the slow process*.

Apart from the internet speed and slow process, she has never had any problems. However, she states a few of her friends have had downloading problems as the provided links were not working.

Kasia thinks of the videos' benefits in terms of the accessibility and the feasibility to replay and repeat. She can easily access the videos through the provided links at any time of the day. Further, she feels that in week three she was struggling to understand the content and she was thinking that, "*oh no, I've hit that point where I'm not smart enough!*". However, she admits that videos have provided her the ability to keep replaying them in her own time "*where it wasn't so embarrassing to keep saying I didn't understand*" as she states. She could go to a quiet place and keep replaying the video until she understood what it was conveying. Accordingly, she adds that,

> *I probably would have never have asked a lecturer to repeat herself three times. If someone was going to say that information so that's definitely a massive advantage.*

So videos have provided her the opportunity to reiterate the message that the lecturers were trying to convey in a real life experience or even comedy. Lecturers have even used comedy as an example to make it more relevant and memorable. Some videos have been played during the lecture and they haven't been uploaded for later access, Kasia thinks that it might be nice to upload these videos online in their course content as well. Although she would like more of them throughout the lecture, she notes that the length of videos should not be more than 12 minutes; if longer, they have to be engaging. Further, she suggests to include fun in the videos. She states that,

> *They have to be concise and they have to be exciting and they have to be able to keep people's attention and still teach the content and keep it relevant as well.*

She also suggests they make sure that the equipment is working and that the use of comedy is always effective.

To Kasia, the major challenges are around lecturers' lack of technology literacy. She feels that about eighty per cent of the time their lecturers have had trouble even playing the video. Thus, she states that,

> *There's a good thirty seconds to two minutes sometimes five minutes, wasted just trying to work out how to get it up on the screen and all of that. But it gets our attention, but when it gets past the thirty second like 'giggle, giggle' she can't do it then we sort of start doing our own thing because we wonder how long she is going to waste getting it to where it…*

Accordingly she thinks if the lecturers were provided with a better way to just press 'play' and know that it's going to work every time, it would save a lot of their time. She also states that,

> *When you're trying to work out in your first semester, how to even access these online videos or what they're there for or what you're meant to be doing with them. And how to take the information away from them, so that's just learning how to be a student.*

Having had experience, she now goes looking for the videos before she reads the content. She has found it easier as it gives her "*a very brief run-through of the chapter before she even gets to the point where she reads the book*".

Having a diagnosed learning disability, videos have provided Chiara the opportunity to access materials at her own pace. She has unusual sleep and wake patterns so with access to online video materials she can access information when she is mentally and physically active. It allows her to follow-up any misunderstandings or questions she may have had following lectures. In her opinion, videos can provide a better understanding and "*can help define problems and clarify situations*". As such, she believes that,

> *Videos add a clarification to teaching and allow students to understand things without a language or slang gap in the generations.*

She also thinks videos could help long distance education in solving the face-to-face interaction issue. As such, she would like to see more videos used within the subject to help explain some of the harder concepts in more depth. She admits that videos have provided her a firmer and

better understanding of the material and the only problem that she has had was when videos were used or posted incorrectly. Despite the huge advantages of videos, she believes that,

> *Many of the videos we are given in our courses are more general, they give background material that is not directly relevant to course assignments.*

Thus, she suggests that,

> *Lecturers should be given refresher course in on-line videos and posting them once every five years.*

Olga thinks videos just provide her with a better understanding of principles and give her the opportunity to understand the subject better. Blended videos have helped her, through visual clarification, to complete the subject successfully and also to clear up a point or a concept that she couldn't grasp. Hence, she prefers

> *To see what someone else may have explained in a lecture or what you've read, good to have that explained visually.*

Although she has had no problem with videos, she suggests uploading more videos through Blackboard that could be accessed easily at any time.

7.4.1 A Synopsis of Interview Findings for Students' Question 2

Based on students' responses, it seems that they were mostly satisfied with the video integration as they reported positive experiences from the videos uploaded and shared by lecturers. The results revealed the interactivity of videos and students' tendency toward games and pleasure attained through video integration. It indicated that they were mostly visually attentive students who would be more intrigued if the lecturer had incorporated a visual modality. Video integration has made them free from the burden of note taking and paying attention to the lecture at the same time. Videos have provided them the opportunity and flexibility to refer back to what is being said by the lecturer with no time and place restriction and with the benefit of documentation once it is downloaded. After all, if the course is interactive they need to be attentive, quick, and responsive; so they need different parts of their mind-body to cooperate

quickly and efficiently. Besides the advantages, the findings revealed that videos cannot stand entirely by themselves and need supplementary material or tutoring on the part of the teacher. The students addressed the necessity of familiarity to the latest Apps on the part of lecturers and appointed their lack of technology literacy, in particular, in the psychology discipline. They were asking lecturers to ensure that the equipment was working and also to resolve the downloading and broken links issues. In contrast to the students in psychology, their counterparts in education were happy with the lecturers' technology use and literacy. They could find the private YouTube channels of lecturers quite useful as they could easily access videos through different apps and from their phones as YouTube supports most devices. It seems that short but scrutinized and well-picked videos might be more appealing to students as the lengthy videos might distract them. Further, they seem to be very interested in amusement and fun that could get integrated into their learning and enhanced through videos. Although students didn't specifically mention multiple intelligences, it is clear from some of their responses that depending on their strengths some videos better suited some students and not others.

7.5 Perceptions of the important MI categories in video assisted learning

This section explores the findings for **Question 3:** *What multiple intelligences do students perceive as important in a video-assisted subject?* The findings presented are based on the student participants' individual experience. It includes the students' perceptions and attitudes towards multiple intelligences and addresses their views on how the subject videos could be modified to have better met their learning needs across their studies at the university.

Before bringing together excerpts of their ideas and experiences emerging from the interview transcripts, participants' raw scores from the MI questionnaire were subjected to descriptive

analysis. The results indicated that this group of students are high on Bodily-Kinesthetic intelligence (*M*=40.08) and low in Existential intelligence (*M*=32.00). Two other intelligences which seem to be most highly developed include Intrapersonal (*M*=39.69) and Interpersonal (*M*=38.54) intelligences. Further, their individual MI subscales are calculated and presented in Table 7-1. Cells **Bolded** reveal the individual strength of the student while the cells with diagonal lines display their weakness.

Table 7-2: Interview Participants' MI categories

Name	Intrapersonal	Bodily-Kinesthetic	Musical-Rhythmic	Visual	Interpersonal	Verbal-Linguistic	Logical-Mathematical	Existential	Naturalist
Ella	**42.00**	39.00	39.00	37.00	37.00	36.00	36.00	32.00	**28.00**
Maggie	**32.00**	42	37	39	42	37	**43.00**	34.00	37.00
Jack	**44.00**	38	35	35	42	39	38.00	**29.00**	33.00
Kris	43.00	**48.00**	41	39	41	41	44.00	**30.00**	36.00
Ava	37.00	38	33	33	**39.00**	34	33.00	32.00	**31.00**
Yvonne	39.00	**41.00**	35	31	32	36	36.00	**25.00**	33.00
Katie	**41.00**	38	37	**26.00**	32	37	33.00	31.00	29.00
Helen	**41.00**	37.00	40	39	40	40	38.00	**36.00**	38.00
Rena	36.00	**41.00**	**31.00**	**31.00**	38	38	35.00	35.00	36.00
Mary	44.00	40.00	42.00	39.00	**45.00**	**34.00**	39.00	40.00	43.00
Kasia	37.00	40.00	40.00	39.00	**41.00**	40	**35.00**	**35.00**	38.00
Chiara	39.00	**40.00**	38.00	36.00	33.00	33.00	33.00	**25.00**	**40.00**
Olga	**41.00**	39.00	38.00	36.00	39.00	38.00	34.00	**32.00**	38.00

Despite the extensive individual diversity of intelligences indicated in Table 7-1, respondents were mostly positive about the video integration supporting their learning needs and catering for their various intelligences. Videos were used for a number of purposes. For instance, visual and musical learners would prefer to see visual and auditory material. Mary believes that videos implemented in her subjects would definitely suit her learning needs and she would probably look at them 60% more than her reading material. Accordingly she asserts that,

> *If a lecturer can give me a lot of auditory and visual content knowledge it helps me a lot and discussion where we can break it down so.*

Experiencing the advantages of video integration supporting her learning needs and intelligences, Olga asserts that,

> *They suit quite well because it is mixed media and I like a visual and a listening concept, I like all kinds of learning as a whole so to get the best balance of what an idea is.*

Olga also thinks that more videos should be implemented in the tutorials as sometimes she has not been able to grasp the concept under discussion. For that reason, she needs to have other sources to help clarify the point. Likewise, Maggie, an online student who has a high logical-mathematical intelligence (*M*=43.00) and low intrapersonal intelligence (*M*=32.00), adds that "*I've become more confident in what I need to look for because I've been told in a video exactly what's being expected*". In addition, Yvonne thinks of videos as "*seeing something that actually help you learn better*".

Video integration also supports verbal-linguistic intelligences. For instance, it provides students interested in reading and writing the opportunity to take notes and enhance their understanding of a concept. Yvonne for instance, enjoys the ability to pause and take notes in her own words and then continue listening. She states that,

> *I like to write things out by hand more than type things, but in a lecture I have to type because I can't write that fast. And then you miss things because you're focusing on typing what they've just said and that is a bit confusing.*

Likewise, Kris, Maggie, and Olga think of videos as providing opportunities to replay and pause the video as many times as they want until they understand the concept. Olga admits that she is "*a slow reader and a low comprehender*" and therefore she has found visuals very helpful. In accordance, Kris finds the use of playing games interactive and supportive as for him,

> *It sort of implants that information in your mind through that little game or whatever, the interactive learning content.*

Bodily-kinesthetic students have also found videos useful as they are entertaining and provide them with tangible evidence of real and practical experiences that could not be achieved in the classroom setting. For Chiara, who is a very 'hands-on' person with a keen sense for tactile activities, videos are helpful as they provide her with practical or real life examples. She believes that visuals are vital for her learning. Videos improve her learning as for her the next step would actually be doing the task described. Kasia also adds that she needs many examples of the content that she is learning. She admits that she can't just read a textbook and then think. So, she thinks "*that's done on the online videos as someone is actually speaking about it and you think*".

Having questions on a video or having opportunities to discuss the videos before, during, or after watching them would also be helpful to those interested in both logical-mathematical and interpersonal intelligences and interactions. As such, they can stimulate an interactive discussion among peers. For instance, Ella who enjoys a face-to-face presence and interaction with lecturers and peers, could get direct feedback from peers and lecturers through the discussion and expression of her opinions through words. She likes "*to work and get feedback from other people and interact with them*". She adds that "*something that someone else might know, I won't know, so in that way, they can tell me and I can learn something from them*". For

Mary, an ideal learning environment would be like a lecture that is more of a discussion rather than sitting and listening. She thinks what lecturers have done with their learning spaces is more suitable for how she thinks a lot of lecturers teach.

Videos can also cater for students who prefer to study alone and rely on their intrapersonal intelligences for their learning needs. As a quite impatient and talkative learner, Ella believes that she can easily get distracted. She thinks "*sometimes it's good to be sitting at home to try and do it all on my own*". As such, Helen admits that she becomes too distracted if she is working in a group; she prefers to study by herself. This group all enjoy the benefits of videos. However, the situation for Kris differs. Although he believes in interactions and is keen to use his interpersonal intelligence, he states that,

> *Group learning is very beneficial for me but I tend to, sort of, shy away from that because I'm not a terribly sociable person. I don't really identify with the students in my classes. I think there's a bit of an age gap. Like, a lot of them have just left school.*

Thus, he has found himself "*a lone wolf*" when it comes to study, and therefore he relies on the online videos for answers.

7.5.1 A Synopsis of Interview Findings for Students' Question 3

With regard to online video materials, students reported that videos could address their various intelligence types and abilities. Because students have different combinations of abilities and intelligences, they are attracted to various video activities based on different reasons, such as note taking, auditory and music, visuals, playing games, interactive discussions and questions, entertainment, and practical examples of real life experiences. Using a video incorporating written text (verbal-linguistic), questions (interpersonal and logical-mathematic), visuals and images (visual-spatial), sound (musical-rhythmic and/or verbal-linguistic), and video (bodily-kinesthetic and other intelligences) can be developed. In this way, the existing video materials

are sufficient to supplement the lesson curriculum and to address their intelligences. Students would be interested in having more videos in their subjects so as to focus and sustain their attention on their learning.

7.6 Summary

This chapter illustrated the students' qualitative data analyses and the results which were applied to respond to these questions. The next chapter will provide a summary of the results of the study, conclusions of the study, implications, delimitations, limitations and recommendations for further research.

CHAPTER 8

SUMMARY, CONCLUSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

The final chapter of this study aims to review a summary of the study and to draw conclusions based on the main findings. Furthermore, the implications, limitations, and suggestions for further research are presented.

8.1 Summary of the Major Findings

RQ 1: (a) Is there any relationship between the students' MI scores and their age and gender?

(b) Is there any relationship between the students' MI scores and their learning experience and motivation?

Considering the aim of the first research question, 111 students of the study were asked to complete the McKenzie's MI inventory online so that their possible profile of the intelligences and their individual strengths and weaknesses would be elicited. The descriptive results revealed that students are higher on Intrapersonal intelligence, as students in Lopez and Patron's (2012) study, and lower in Existential intelligence. Bodily-Kinesthetic and Musical-Rhythmic intelligences were also found as other highly developed intelligences of the current student sample. However, as noticed, some findings of the study about strength and weakness of students are not in complete agreement with other studies. For instance, Lopez and Patron (2012) report that students were higher in interpersonal intelligence and lower in verbal-linguistic and visual-spatial intelligences. As reported, Musical-rhythmic and logical-mathematical intelligences were other dominant intelligences of students. This different finding is perhaps because of the fact that they used a different instrument (a 30-item

questionnaire), measuring only seven types of intelligences introduced by Gardner in 1983. In this study, the researcher utilized a validated questionnaire measuring all nine intelligences.

The finding revealed a significant difference between the MI profiles of respondents and their age category. It was revealed that the students in the pre-adulthood category are higher on Intrapersonal intelligence and lower in Existential intelligence. Early-adulthood respondents are higher on Bodily-Kinesthetic intelligence and lower in Existential intelligence. The middle-adulthood respondents are higher on Intrapersonal intelligence and lower in Existential intelligence. However, no significant difference was found between modes of delivery and intelligences. Although the Kruskal-Wallis Test showed significant differences between age groups and a number of intelligences, the interpreted effect size values of the findings revealed a small magnitude of the difference in the means except for the moderate effect size obtained for Musical-Rhythmic (r =0.33) of pre-adulthood and early-adulthood. Similarly, Meneviş and Özad (2014) have reported a significant difference between age and visual-spatial, logical-mathematical, intrapersonal, naturalist and existential intelligences. Although the findings do not share similar lower and higher intelligences, the reality of the influence of age on MI should not be ignored.

Mann-Whitney U tests between the two genders and MI subscales revealed a significant difference between gender and Logical-Mathematical and Intrapersonal intelligences. These findings are similar to studies (e.g., Meneviş & Özad, 2014) that have found a significant relationship between MI and gender and contrary to other studies (e.g., Lopez & Patron, 2012) that have found no significant difference between intelligence types and gender. For instance, Meneviş and Özad (2014) have reported a significant difference between different types of intelligence and gender among high school students. However, as Meneviş and Özad (2014)

found, the type of intelligences seemed to be different among the students across different year levels of their studies as the findings could not be comparable to university students who already have demonstrated a level of intelligence and ability.

The correlation coefficient *r* values showed a negligible significant relationship between the two variables of Learning Experience and Age of the participants. The relationship between the two variables of Learning Experience and Motivation (r =0.48), Learning Experience and MI scores (r =0.32) and Learning Experience and bodily-kinesthetic and visual-spatial intelligences(r =0.32) were also moderately significant.

The Chi-square findings revealed that there was no significant difference in students' gender and mode of learning identifiable among high/low achievers of both the motivation and learning experience variables.

Lecturers' Question 1: *What different modes and purposes are there for online videos?*

The first question asked of the lecturers concerned the different types and purposes for online videos that they use in their teaching. The responses were collected from 13 lecturers in two different disciplines, namely, Education (N=10), and Psychology (N=3). The findings revealed distinctive similarities and differences between two disciplines in the extent of video integration and types of videos that they use. The most visible similarity between lecturers was in terms of incorporating different kinds of short YouTube videos. It was found that participants in Psychology rely more on videos from YouTube and other online resources because of the lack of tech-literacy. Contrary to their counterparts, all Education lecturing staff could create their own videos by using Camtasia, and not have a reliance on the available online sources.

YouTube, as part of the emerging technology and a component of an active learning strategy and medium has proven its capability for catering for the needs of both academics and students. As stated in some studies, YouTube provides users an opportunity to create, upload, share, and view videos easily using any web browser, as well as the ability to comment on others' contributions (Galan et al., 2015; Logan, 2012; Miller, 2010; Ritzhaupt et al., 2015; Szeto & Cheng, 2014; Szeto et al., 2015; Tamim, 2013). Although YouTube hosts a wide variety of free access videos (Garrett, 2016; Jung & Lee, 2015; Orús et al., 2016; Rabee et al., 2015), the use of YouTube videos creates the need to sort through the platform to find good quality material (e.g., Ritzhaupt et al., 2015).

The findings of this study revealed the concerns of lecturers about their struggle with time in order to find the right videos among millions of possibilities that are uploaded on the site. For this reason, several solutions are recommended. A solution to overcome this difficulty is to create educational websites and upload and share videos for academic use (e.g., Buzzetto-More, 2015; Sherer & Shea, 2011). For this reason, a list of recommended online resources and videos (e.g., YouTube EDU, YouTube for Schools) is provided in Section 3.1.2.1. In addition, some useful links for both students and lecturers are provided in Appendix K. Another solution that has been recommended by some researchers (e.g., Orús et al., 2016; Sherer & Shea, 2011) to higher education institutes showing increased interest in the potential of YouTube videos is to have their own YouTube channels to manage video contents and their educational impacts. The findings revealed that only some of the lecturers in Education could establish their own YouTube channels to upload and share their videos for their students.

Moreover, the findings revealed certain tech-literacy differences between baby boomers and Generation Xers. Although the university has provided optional teaching and learning

workshops by inviting expertise from outside, it seems that lecturing staff in Psychology do not have the required technology literacy to make it work, or they are not sufficiently motivated to participate in these workshops. Accordingly, some researchers (Alon & Herath, 2014; Vie, 2008) argue students' exposure to technology and the technological literacy gap between students and their educators. For instance, Vie (2008) argues that the most significant challenges are "not…providing access for students surrounded by technology but rather effectively integrating technological literacy instruction into the classroom in meaningful ways" (p. 10) and the technological literacy gap between students and their educators (Alon & Herath, 2014). Thus, lecturers need to understand that today's classroom environment and students are challenging their various level of proficiency and reliance on technology. They should note that the use of any type of videos could not be implemented effectively if students and educators alike do not have the required technology literacy to make it work or if they are not motivated to participate in this mode of learning.

Alternatively, it was revealed that one of the education baby boomers has a high tech literacy. As an expert in the technology, he makes use of all three types of web-based material as an indispensable part of his career and interest. He prefers to make the needed videos rather than taking a ready-made one from online bases. He attempts to make both visual and auditory representations in the minds of his multi-generational students. It seems that he has been able to integrate new literacies introduced with the arrival of internet and network affordances into his classroom preparing multigenerational students with 21st century skills as recommended by some researchers (Brown et al., 2005; Cramer, 2007; Klopfer et al., 2009; Speak up Project Tomorrow [SPT], 2010). He also has created his own YouTube channel to upload and share videos with his students.

Another education boomer participant admits that she suffers from a lack of technology literacy. Although she creates her videos using Photo Booth for her online students or picks videos relevant to the lecture from YouTube, she still needs to engage more with the university's supportive workshops. The lecturer could also be supported by a written manual guidance to overcome the possible issues concerning the technological innovation changes in an educational setting. The solution could also be solved by creating a multi-purpose online video-sharing repository platform. As such, lecturers, regardless of their generational gap could easily produce, share and discuss their videos with their peers and create their own video teaching and learning communities as supported and advised by some researchers (Agazio & Buckley, 2009; Szeto & Cheng, 2014). These functions could provide academics in different disciplines with greater confidence regarding their lack of tech literacy. A key feature of virtually all the participants was that the use of digital video in their teaching is expanding as time goes on and that the student learning benefits were obvious and increasing as competence and systems improve.

Lecturers' Question 2: *What are the lecturers' perceptions of the advantages and disadvantages of the flipped classroom?*

As a variant of blended learning and an innovative pedagogical approach, the flipped classroom approach has garnered a lot of attention among educators and the media. Considering the aim of the question, five lecturers from Education were asked to share their experiences of employing the approach. In fact, the introduction of something like the flipped video concept requires professional development around how to deal with the challenges lecturers have found. According to the data gathered from interviews, some of the advantages as well as obstacles in successfully implementing the flipped model were found and highlighted. As such, the advantages are around the flexibility, problem solving, depth of understanding, freeing classroom and lecturers' time, more time for hands-on activities and the opportunity for

learners' required changes. The findings of this study are in complete agreement with other researchers who have reported the various educational benefits of this approach for both students and educators. For instance, Mason et al. (2013) list three benefits for using the flipped classroom approach. These advantages include, a) freeing up class time for interactive activities and problem-based learning, b) allowing educators to present material in different ways to engage students with different learning needs and styles, and c) encouraging students to be self-learners. Other benefits of the flipped classroom as addressed by Álvarez (2012) include:

- Notes are now available at home for students who were absent.
- Students are less frustrated and disruptive in class because there is someone on hand to help one-on-one.
- A much larger percentage of assignments are completed and to a much higher quality.
- When an educator is absent (p. 20)

Accordingly Butt (2014) states that, "at the heart of the flipped classroom is moving the "delivery" of material outside of formal class time and using formal class time for students to undertake collaborative and interactive activities relevant to that material" (p. 33). So, any use of the classroom time to permit educators to teach both content and practice the concepts takes advantage of the opportunities provided by this approach (Findlay-Thompson & Mombourquette, 2014; Kachka, 2012a). As stated by Armstrong (2014), technology is credited as a principal factor that changes the role of students into learning explorers and teachers into facilitators or guides, and enables students to take control of their learning. Thus, this approach provides students the opportunity to learn in a more collaborative setting focusing more on working through problems with teachers and peers.

Although there are credible reasons to utilize the flipped classroom approach, it has also garnered obstacles. It seems that the challenges as reported with lecturers are around the use of Camtasia, rigidity (clunky platforms), technology access and funding, technology mastery, upskilling in latest technological change and innovation, the structure and the pedagogy and

the types of activities that they implement. In fact, digital technologies can only be effective in combination with sound pedagogical approaches. Some researchers complain that the method has neglected the important aspects of good teaching (Morgan, 2014b). Some other highlighted issues are around creating a big gap between high and low-income students, internet access problems especially in the rural areas, limited budget of educational institutes and the costly required software access, the required training sessions for teachers on how to use the software and to structure a flipped classroom, and the required self-learning reliance and motivation from students in this non-traditional method (Findlay-Thompson & Mombourquette, 2014). As stated by Ash (2012) and Raths (2014), the principle of this method may look simple, but there are a multitude of ways of flipping the classroom based on the subject and educational philosophy differences. Moreover, the classroom environment has become a generational challenge for both students and lecturers based on their various level of proficiency and reliance on technology. For this reason, Berrett (2012) states, "content is not going to be the thing we do. We're going to help unpack that content" (p. 38).

In addition to the above-mentioned challenges, lecturers need to find out if students are engaged with the material. Indeed, students must have the motivation to follow the educational material provided through the flipped videos. Obviously students have the reading materials and the lecture notes, but giving them a flipped video to watch before coming to class, might give them a sense of what the content of the discussion in the class will be. In the university's platform, it might be worthwhile to have the first screen of the video up for the students to click to start the video as that is what they are familiar with in the other technologies they use.

Students' Question 1: *How and why do students use online videos and how do they influence subject/course engagement?*

Considering the aim of the questions for students, 13 willing students of both disciplines namely, Education and Psychology were interviewed at a mutually agreed time and venue. According to the data gathered from the interviews, several findings were obtained and the videos were perceived to be beneficial for students in various respects. First, videos were found to be a useful stimulus in students' engagement and motivation. Further, it was revealed that interest plays a major role for students who are keen to watch the topics that intrigue them. It seems that they were dissatisfied with monotonous video lectures that failed to make their learning interesting. Similarly, some researchers have reported the important role of videos and have insisted on its role as a learning medium for enhancing understanding of learners (Brophy, 2008; Buzzetto-More, 2015; June et al., 2014; Ritzhaupt et al., 2015). For instance, Buzzetto-More (2015) posits that YouTube videos enhance students' engagement, depth of understanding, and satisfaction. Given the availability of the internet, Garrett-Wright and Abell (2011) suggest that YouTube videos for instance, can assist bridging the generational gap between lecturers and students.

Second, the findings revealed that students are no longer interested in too much reading, and prefer easier and less demanding modes of learning, i.e. watching videos which denote a change in their desired mode of internalizing knowledge to an easier one. Desire for brevity, conciseness, and to the point videos with no additional materials were also found more attractive and engaging for them. However, as stated by Tucker (2012) covering a concept in a short, concise, and bite-sized chunk is a primary concern that should be considered by educators.

Moreover, the findings revealed that students enjoy the flexibility to be able to watch videos with no time and place restrictions and thus they mostly have become less field independent. In addition, variety is perceived to be important to Net-Geners in particular, and music and visual aids seem to be their preference and a significant motivational stimulus. Although classrooms have students from various generational cohorts (Baby Boomers, Generation Xers, and Net-Geners), the majority of today's students belong to the Net Generation as detailed earlier (see Sections 1.2 & 3.2.7). As a generation often possessing wide and advanced ICT skills, Net generation students consider the integration of web-based technologies in the process of their learning and information gathering (Buzzetto-More, 2015).

And lastly, it was found that animation and simulation make their learning easier because it is in the form of a film and does not need too much concentration and reading. They like cognition forming and cognition sharing as a team work strategy and have the higher stimulus of interactive communication. Likewise one of the students stated that the younger people engage better with videos. This is what Tapscott (2009) attributes to gaming and Net-Genrs desire and expectation for speed and immediacy and their visual skills that make them superior scanners. They need things to be quick and a short video meets this requirement. Sources of information and perception of authority figures have also changed for Net-Geners. Lastly, it seems that videos could be used as new modalities for changing the life for people with various learning disabilities.

Students' Question 2: *What are the students' perceptions of the educational value of online videos and their learning experiences within the subject?*

The data of the study revealed that students were mostly satisfied with the video integration as they reported positive experiences from the videos uploaded and shared by lecturers. The results revealed the interactivity of videos and students' tendency toward games and pleasure

attained through video integration. The findings also revealed that they were mostly visually attentive students who would be more intrigued if the lecturer had incorporated a visual modality. Video integration has given them several opportunities and benefits. For instance, it has made them free from the burden of note taking and paying attention to the lecture at the same time. Videos have also provided them the opportunity and flexibility to refer back to what is being said by the lecturer with no time and place restriction and with the benefit of documentation once it is downloaded. The findings of the present study support what has been reported earlier of the use of videos (e.g., Kinnari-Korpela, 2015). Collecting data of the engineering students regarding their mathematics subject, Kinnari-Korpela (2015) reported that mathematically low proficient students would enjoy the advantages provided by videos including time flexibility and watching the videos several times to understand the concept.

After all, the findings revealed that if the course is interactive they need to be attentive, quick, and responsive; so they need different parts of their mind-body to cooperate quickly and efficiently. Besides the advantages, the findings revealed that videos cannot stand entirely by themselves and need supplementary material or tutoring on the part of the teacher. The findings of the study also support what has been reported before by Oblinger and Oblinger (2005a). Although Net-generation learners are born into and grown up in an era of computers and the Internet, and frequently use them and are plausibly expected to have a strong preference for online courses, the reality is otherwise. Accordingly, Oblinger and Oblinger (2005a) found that a majority of students “preferred a moderate amount of IT in their classes”, and that “face-to-face” interactions were preferable to online options (p. 2.11).

The students also addressed the necessity of familiarity with the latest Apps on the part of lecturers and appointed their lack of technology literacy, in particular, in the psychology

discipline. They were asking lecturers to ensure that the equipment was working and also to resolve the downloading and broken links issues. Apart from lecturers' lack of tech-literacy, lecturers are advised to download and document useful videos. As such, it can be used in case that the links are replaced or broken. Further, lecturers need to update the provided video links on their presentations (e.g., PowerPoints, videos) to ensure that students can easily have access to them. In contrast to the students in psychology, their counterparts in education were happy with the lecturers' technology use and literacy. They could find the private YouTube channels of lecturers quite useful as they could easily access videos through different apps and from their phones as YouTube supports most devices. Advantages were highlighted in response to the first question of lecturers and discussed in detail in Section 3.1.2.1. The compatibility of YouTube to work with different learning management software has been reported by researchers (Agazio & Buckley, 2009; Garrett-Wright & Abell, 2011). As such, the majority of videos on YouTube can be embedded in other web-based media or online course environments such as Moodle and Blackboard (Szeto & Cheng, 2014), and can be shared across all social networking platforms such as Facebook and Twitter. Further, YouTube videos can be easily accessed via smartphones and tablets (Smith, 2014). Based on the findings, it seems that short but scrutinized and well-picked videos might be more appealing to students as the lengthy videos might distract them. Further, they seem to be very interested in amusement and fun that could get integrated into their learning and enhanced through videos.

Students' Question 3: *What multiple intelligences do students perceive as important in a video-assisted subject?*

A lot of educators adhering to the MI theory are claiming its efficiency in the teaching setting and practice. Despite its potential to enhance teaching and learning, the use of MI seems to be ignored in higher education institutes. For instance, Barrington (2004) claims that, "teaching and learning in tertiary institutions is often conservative and teacher-centered, and privileges

certain kinds of abilities over others" (p. 432). In fact, the MI theory refers to a learner-based philosophy that exceeds the traditional view of intelligence as being focused on verbal-linguistic and logical-mathematical intelligences into a multifaceted human intelligence and notes the existence of other relatively independent intelligences (Gardner, 2011b; Richards & Rodgers, 2014). Accordingly, Spillane (2008) claims that MI can make "learning personal, purposeful, meaningful and relevant and give the brain reason to pay attention, understand and remember" (p. 147).

With regard to online video materials, students reported that videos could address their various intelligence types and abilities. Because students have different combinations of abilities and intelligences, they are attracted to various video activities based on different reasons, such as note taking, auditory and music, visuals, playing games, interactive discussions and questions, entertainment, and practical examples of real life experiences. Using a video incorporating written text (verbal-linguistic), questions (interpersonal and logical-mathematic), visuals and images (visual-spatial), sound (musical-rhythmic and/or verbal-linguistic), and video (bodily-kinesthetic and other intelligences) can be developed. Although the data was collected from university students who already have demonstrated a level of intelligence, the findings revealed that the video integration could improve learners' abilities and could positively influence their learning experience. Likewise, as Gardner (2011a) notes, "these [intelligences] are relatively independent of one another, and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures" (p. 9). In this way, the existing video materials are sufficient to supplement the lesson curriculum and address their intelligences. Students would be interested in having more videos in their subjects so as to focus and sustain their attention on their learning.

As noticed, the researcher of the current study didn't use the terms 'strong' or 'weak' for describing students' individual talents and differences. In fact, the researcher is in complete agreement with Armstrong (2009) who states that "a person's "weak" intelligence may actually turn out to be her strongest intelligence, once it is given the chance to develop" (p. 27). As mentioned in earlier chapters, a key point in today's educational setting is to address the current multi-generational tertiary students' capabilities and to highlight the importance of their learning needs and procedure. The proliferation of new web-based learning support and the explosion of technology has provided students an array of choices for their learning, depending on their personal experience, preference, and the availability of the technology supported learning resources. The ultimate goal for a successful integration of technology and multiple intelligences is to provide the most effective and well-organized setting for students' learning. The findings from this study suggested the thoughtful and purposeful use of video integration as one of the easiest ways to bridge the gap and to cater their diverse learning needs and intelligences.

8.2 Implications of the Study

The findings of this study may have a number of theoretical and pedagogical contributions. A significant theoretical implication of the current study is that a universalistic perception that only visual and auditory students dealing with the video tasks/visual aids could benefit from video integration was challenged. The findings of this study revealed the effectiveness of visual media and the positive perception of students possessing different intelligences. The findings of this study are not meant to be construed as a prescription for the superiority of online video-enhanced learning over traditional face-to-face learning, or the other way round. But rather they should be seen as further back up and supplementary evidence to recognize individual diversities and differences of the multi-generational learners in order to accommodate the

changing nature of literacy, and nurture their learning needs in the classroom setting. This study, indeed, aimed at promoting and catering for the learning environments as they need to "match the habits and study arrangements of a multitasking student body by being as adaptable and flexible as the students who occupy them" (Miller, 2004, p. 2).

In fact, the notion of 'one size might not fit all' should be promoted all the time. The relatively contrasting attitudes of multi-generational students and particularly Net-Geners, towards traditional lectures could be seen as a caution against the invariable utilisation of this mode of content delivery in all the contexts and disciplines. This in turn highlights the fact that these multi-generational learners bring different characteristics, experiences, and expectations into the classroom. Thus, educators need to consider their students' generational similarities, differences and preferences so as to motivate and engage them in their learning and teaching goals. This recognition is of chief importance because if the students' perceptions are taken for granted, then the result would be resistance and alienation on the part of the students. The challenges may arise due to insensitivity to the learning needs, individual differences and generational technology expectations and experiences. Research findings also suggest the need for professional development for academics particularly so as the arrival of the new generation of learners are seeking more interactions and less a lecturer-based setting. The participants of the study expressed that there are still lecturers who continue to only lecture in these classrooms and the students may be resistant to those not addressing their various learning needs and talents and do not use the available technological facilities as part of their teaching mode. The participants appointed that they do not favour a learning environment that discourages their interactions with their peers, supporting a sole lecture setting in which lecturers are considered as authoritative figures with a lack of technology literacy.

Another cohort who has taken benefit from the increased technology access and online video integration is students' with learning disabilities. According to a college review (Knight, 2013), the college of Educational Sciences has "the highest proportion *(6.3%)* of students with a disability of any [college]" (p. 2). To enhance learners' achievement, educators are using or creating online videos for various delivery modes that are accessible through teaching-friendly characteristics of Web 2.0 technologies and address their learners' different talents. To date, there has been limited empirical research supporting the reliability or validity of these visual media aids for these group of learners. Current findings suggest that the inclusion of more videos, and adding captions to the videos for participants with diagnosed learning disabilities can enhance their understanding, learning abilities and engagement.

Furthermore, those academics concerned with challenges and difficulties relating to online video use, lecturers' technology literacy, and experiences are left to wonder how these problems could be resolved. Are subject videos considered to be positive pedagogical supplementary tools serving learners' academic goals and engagement? To the researcher's knowledge, this is a seminal work into the insights of both educators and students into the phenomenon of online video use as well as addressing students' individual learning needs. One of the five aims of the university's 2013-2017 Plan's core business of learning and teaching is to "deliver flexible and inclusive learning environments that capitalise on both face-to-face and virtual innovations" (JCU, 2013, p. 7). Accordingly, the college of Educational Sciences' Triennium Plan 2013-2015 sought to meet the aims of the University Plan and enhance learning and teaching in the college through explicit objectives and accompanying strategies. A priority objective was to 'develop contemporary pedagogies for flexible and inclusive learning environments' by promoting the uptake of flexible delivery within courses and developing technology-based curriculum innovation designed to enhance student engagement and

learning. At this point, no study had sought lecturers' input on the types and purposes of video amenities, challenges, and technology literacy needed in the classroom. This study could offer important information for administrators and lecturers about the efficacy of these technological innovations and the requirements needed.

During the course of teaching, educators are very much in need of an appropriate tool to assess students' areas of strength and weakness in order to determine appropriate types, levels of learning, and teaching activities to cater to their various individual talents and abilities. Since the introduction of the MI theory in 1983, much research into the validity and efficacy of the theory has occurred. Different MI inventories have been used in different countries and settings around the world. This diversity has created a complex situation for researchers in deciding on the most suitable instrument for their particular needs. To date, no systematic review has examined the most appropriate inventories. However, this study aimed to ascertain if there was empirical evidence to support McKenzie's MI inventory as a useful instrument to measure students' strengths and weaknesses. A systematic review of the experimental studies using McKenzie's (1999) MI Inventory conducted between 1999 and 2016 was performed. A search through electronic databases, yielded 73 original research investigations meeting the established inclusion criteria. The inventory has performed well in diverse samples and countries. Furthermore, the content validity of the inventory was verified by two Australian-born academics with PhDs. They both were registered academics with more than 15 years of teaching experience. As the inventory was made for the American context, they were asked to review and modify some of the wording and phrases to simplify it and make it more comprehensible for the Australian context and adaptive to the cultural environment of the study. After that, the MI Inventory was checked for face validity and was revised by three

members of the supervisory team who are experts in related fields and have considerable knowledge in multiple intelligence, academic performance and questionnaire design.

The utilized MI inventory in this study can provide diagnosing information about particular areas of strength and weakness the students have. As such, the suggested MI inventory can provide a handful of implications for collecting students' various talents for the required learning environments, especially in Australian contexts. Therefore, adapting the suggested inventory can have important implication for the issue of authenticity as valid materials have always been demanded. It can also motivate educators to utilise more effective ways of teaching by trying to pinpoint their students' different intelligences, monitoring the students' progress more accurately, and creating innovative videos catering to students' needs in different disciplines.

Universities are being encouraged to provide an online video-sharing repository of professional videos for fostering communication and collaboration practices among lecturers so as to save a lot of their time looking for appropriate videos. A written guidance to improve their tech-literacy is also recommended. The university should also encourage lecturers to create their own private YouTube Channels and stream videos there as it supports most devices. It can provide more flexibility to students who cannot access videos through other devices, their iPhones for instance, and have experienced difficulties to reach videos.

8.3 Delimitations of the Study

This study may be viewed with a few delimitations in mind. The delimitations included the raters who assisted the researcher in conducting the study, and the time of data collection. This research also was confined to surveying tertiary students and obtaining the perception of both

students and their lecturers at a university located in the tropics. Including other universities or other disciplines was not possible because of the difficulty in managing the qualitative data collection phase of the project. Only students and lecturers in two disciplines, namely Education and Psychology were included in this study.

8.4 Limitations of the Study

There are five limitations in the study. This study was limited to a small rural and remote Australian university campus located in an economically depressed region of far north Queensland. For this reason the findings may not be widely transferable to other universities whose students are more privileged with a range of options for access to technology and the required funding and training. By creating online subjects in 2000 using a trial website, the university attempted to be a leader in technology integration. By providing the latest technology to its educators and students, regardless of the university location, it helped to view this limitation as the strength of the study.

The number of respondents completing the quantitative phase that was collected through the online surveys were not the same. In fact, 236 participants answered the MI Inventory and 171 completed the researcher-made questionnaire. The total number of respondents completing both questionnaires was 111. The difficulty encountered in matching respondents was in regards to changes in reported residential addresses. Students failed to inform the researcher of their change of address thus obfuscating the possibility for any further matching of the survey data. A decision was taken to work only on clearly matched data.

Although the study limits its focus to students of both genders in two disciplines: Behavioural Sciences and Educational Sciences, collecting data from various subjects, proved to be

problematic despite students receiving 1 course credit and had the possibility of entry into draws for 4 gift cards as incentives. After matching the data, the quantitative data revealed only 32 males (28.8%) and 79 females (71.2%). It was also revealed that 91 respondents were in first year, 13 in second year, 6 in third year and 1 respondent was in the final year. All the students were enrolled in some Psychology subjects.

Although the study used a mixed-methods approach, its predominant approach is qualitative. Semi-structured interviews are the main sources of data collection. In this respect, due to the imbalances in the number of participants from the different discipline areas (Behavioural Sciences=9, Educational Sciences =4), the year of study (all Behavioural Sciences participants were first year students) and gender (males=2, females=11), the findings cannot be generalized to other student cohorts or learning contexts. As the participants were mostly female, this could affect the observed multiple intelligences and their perceptions of online video use. According to the College Review (Knight, 2013), it has "the highest proportion (78.9%) of female students of any [college]" (p. 2). In addition, Tapscott (2009) states that "the Net Generation is the largest, most ethnically diverse, and most female dominant college population to date" (p. 123). Researcher bias could probably have also affected data collection and interpretation of the results. As it is a new approach being embraced by a small sample of education academics, only 5 participants could be found for this part of the study.

8.5 Suggestions and Recommendations for Future Studies

There are a number of suggestions for further study based on this research. One key suggestion is that technology literacy for lecturers be a priority so as to ensure they know how to use the digital technologies properly. Likewise, our results are encouraging the necessity to link technology to lecturers' teaching and curriculum design proficiency and strategies. As the

majority of students have access to social networking platforms like Facebook on their mobile phone plans, and it's free, there is a need that the Learning Management System be compatible with other kinds of software, social media and social practices that students use. This remains an untapped area of potential for learning. Unfortunately higher education institutions and many academics remain quite concerned about social media, and its possible misuse. Future research could focus on how students' social practices could be harnessed for learning.

Based on the current findings, it was revealed that lecturers were cautious in making changes to their subjects on the basis of students' feedback. Lecturers need to review the feedback that they receive across time, and make the necessary changes to reflect that feedback. As such, to determine the long-term value of video technology enhanced subjects and to address issues and perceptions associated with students' engagement and learning, future studies might include a longitudinal component, analysing the relationship between students' learning achievement and engagement in video technology enhanced subjects over a period of time.

Further, some academics believe that the traditional lecture is dead and they need to keep pace with what's happening in the world around them because of the technology emergence and students' exposure to them. Currently, the focus has been on the lecturers needing to make changes in order to survive within their discipline areas so as to meet the student demands. However, lecturers' should not just make changes based solely on student feedback as students are not professional educators and often suggest things that would be detrimental to their study. For example, some students don't like challenging tasks and therefore does that mean we should abandon challenging tasks?

Another aspect that needs consideration is the students' role. There is a need for the debate to shift towards students and what skills and prior knowledge they bring to the classroom. What are the reasons for the students attending university? Is it to fulfil a life ambition to be a professional, or is it because their parents want them to be a teacher, psychologist, or engineer or is this their fifth choice on their Queensland Tertiary Admissions Centre (QTAC) form. Given the various student motivations, it is difficult for a lecturer to try and satisfy all their needs. Regardless of the changes happening in higher education, there is no doubt that students can still attend universities and enroll in subjects delivered without the integration of new technologies. In essence, more empirical studies are needed to investigate students' motivational aims in attending the university and their engagement with their studies.

After having looked at the students' experiences and challenges, it is also necessary to study the experiences of students of both genders, in the different years of study and in other disciplines in order to identify the students for whom these video technologies are most beneficial; keeping in mind individual differences and learning styles. In addition, continued research on the level of video facilitation by educators in these subjects should also be considered. Further improvements to this study could include a focus on the content of the videos by considering the length of online videos, and if lecturers have personalized their videos. Future studies should focus on whether shorter videos created by the lecturers have greater learning impact than the traditional face-to-face lecture. At present videos take many forms including the lecturer being present in the video, just a voice, or the lecturer who is actually speaking to the person rather than talking to the side of the video over the computer screen. One powerful way of avoiding pitfalls is to enhance lecturers' technological proficiency. The impact these differences may have on student learning and engagement require further scrutiny. In fact, the researcher thinks that anything that can aid students to

engage with the video is worthwhile. To enhance the potential for generalisability of the findings, future studies might involve random samples from regional and urban educational institutions exhibiting similar and different demographic and institutional characteristics.

Lecturers require continuous professional development associated with new media, including how to create videos. Choosing relevant videos to highlight content, and learning how to provide a good verbal introduction and a context to the videos chosen is important. They need to learn how to cognitively prime students to engage with that video. Students pick up very quickly whether or not lecturers know what the video is about, and if there isn't an introduction to the video that really contextualises it, students won't pick up much from watching the video as they would have if you've really given the video a bit of an introduction.

Lastly, the researcher believes that there are many ways formally and informally, explicitly and tacitly to gauge intelligences. However, the current study was not able to find a solution to relate the existential and naturalist intelligences to video integration. It may have been a function of the subjects not including topics on these areas. Research on the perceptions of education versus psychology lecturers could also yield more specific reasons as to why these talents were not addressed. Importantly, future studies could include data from other subjects such as Sustainability to determine if these videos would play a role in nurturing talents specific to naturalist and existential intelligences.

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APPENDICES

Appendix A: McKenzie's MI Inventory

Please read each statement. Tick **(✓)** the response number (1, 2, 3, 4 Or 5) that tells HOW TRUE OF YOU THE STATEMENT IS.

1. *Completely Disagree*
2. *Disagree*
3. *No idea*
4. *Agree*
5. *Completely Agree*

Section A:

	1	2	3	4	5
7. Animals are important in my life.					
25. I can complete calculations quickly in my head.					
27. I can't begin an assignment until I have all my plans in place.					
28. Structure is a good thing.					
16. I remember things by putting them in a rhyme.					
83. I remember better using graphic organizers.					
53. Sports are a part of my life.					
2. Ecological issues are important to me.					
10. I pick up on subtle differences in meaning.					
1. I enjoy categorizing things by common traits.					

Section B:

	1	2	3	4	5
67. It is easy for me to explain my ideas to others.					
3. Classification helps me make sense of new data.					
51. I learn by doing.					
12. I focus in on noise and sounds.					
49. I belong to more than three clubs or organizations.					
18. Listening to sounds in nature can be very relaxing.					
9. I enjoy studying biology, botany and/or zoology.					
26. Logic puzzles are fun					
36. I like traveling to visit inspiring places.					
34. I enjoy viewing art work.					

1. *Completely Disagree*
2. *Disagree*
3. *No idea*
4. *Agree*
5. *Completely Agree*

Section C:

	1	2	3	4	5
85. Charts, graphs and tables help me interpret data.					
39. I wonder if there are other forms of intelligent life in the universe.					
35. Relaxation and meditation exercises are rewarding to me.					
90. I can visualize ideas in my mind.					
38.Learning new things is easier when I see their real world application.					
17. Concentration is difficult for me if there is background noise.					
29. I enjoy trying to fix things that aren't working properly					
46. Study groups are very productive for me.					
44. I often serve as a leader among peers and colleagues.					
74. I learn best when I have an emotional connection to the subject.					

Section D:

	1	2	3	4	5
70. I enjoy public speaking and participating in debates.					
48. Friends are important to me.					
87. I can recall things as mental pictures.					
15. I respond to the rhythm of poetry.					
61. Foreign languages interest me.					
77. Working alone can be just as productive as working in a group.					
75. Fairness is important to me.					
72. I like to be involved in causes that help others.					
5. I believe preserving our National Parks is important.					
20. Remembering song lyrics is easy for me.					

Section E:

	1	2	3	4	5
78. I need to know why I should do something before I agree to do it.					
30. Things have to make sense to me or I am dissatisfied.					
11. I easily pick up on patterns.					
24. I get easily frustrated with disorganized people.					
14. I enjoy making music.					
63. I keep a journal.					
55. Demonstrating is better than explaining.					
33. Religion is important to me.					
8. My home has a recycling system in place.					
47. I am a "team player".					

1. *Completely Disagree*
2. *Disagree*
3. *No idea*
4. *Agree*
5. *Completely Agree*

Section F:

	1	2	3	4	5
43. The more the merrier.					
86. A music video can make me more interested in a song.					
13. Moving to a beat is easy for me.					
4. I enjoy working in a garden.					
57. I like working with tools.					
62. I enjoy reading books, magazines and web sites.					
76. Social justice issues interest me.					
88. I am good at reading maps and blueprints.					
69. Puns, anagrams and word puzzles are fun.					
19. Musicals are more engaging to me than dramatic plays.					

Section G:

	1	2	3	4	5
23. Problem solving comes easily to me.					
65. Taking notes helps me remember and understand.					
89. Three dimensional puzzles are fun.					
22. Step-by-step directions are a big help.					
81. Rearranging a room and redecorating are fun for me.					
56. I love to dance.					
73. I am keenly aware of my moral beliefs.					
45. I value relationships more than ideas or accomplishments.					
59. Hands-on activities are fun.					
84. I enjoy all kinds of entertainment media.					

1. *Completely Disagree*
2. *Disagree*
3. *No idea*
4. *Agree*
5. *Completely Agree*

Section H:

	1	2	3	4	5
80. I am willing to protest or sign a petition to right a wrong.					
71. My attitude effects how I learn.					
37. I enjoy reading the work of philosophers.					
40. It is important for me to feel connected to people, ideas and beliefs.					
50. I dislike working alone.					
68. I write for pleasure.					
82. I enjoy creating my own works of art.					
64. Word puzzles like crosswords or jumbles are enjoyable.					
60. I live an active lifestyle.					
32. I enjoy discussing questions about life.					

Section I:

	1	2	3	4	5
42. I enjoy informal chat and serious discussion.					
79. When I believe in something I give more effort towards it.					
66. I faithfully contact friends through letters and/or e-mail.					
6. Putting things in hierarchies makes sense to me.					
52. I enjoy making things with my hands.					
54. I use gestures and body language cues when I communicate.					
21. I am known for being neat and orderly.					
31. It is important to see my role in the “big picture” of things.					
41. I learn best interacting with others.					
58. Inactivity can make me more tired than being very busy.					

Appendix B: Students' researcher-made Questionnaire

Please complete the following information to help the researcher match the questionnaires later.

1. First 3 Letters of the street you live in

2. First 3 letters of your Mother's Maiden Surname

Section A:

Please complete the following information. Tick the appropriate boxes which best represents your answer.

1= Completely Disagree
2= Disagree
3= No Idea
4= Agree
5= Completely Agree

		1	2	3	4	5
3.	The use of online videos in the subject helped me understand the material better.					
4.	The use of online videos in the subject stimulated my interest in class sessions.					
5.	5. Online videos provided me with valuable resources for this subject.					
6.	The use of online videos in the subject enriched my learning experiences in this class.					
7.	I was able to learn effectively because of the mix of videos used in this subject.					
8.	Online videos made the class feel more interactive.					
9.	I prefer learning through videos more than through an in-class lecture.					
10.	The use of online videos enriched the subject materials.					
11.	I wish the instructor had used more online videos.					
12.	Using online videos helped me to reflect on what I was learning.					
13.	Online videos used in the subject contributed to my learning.					
14.	Online videos were a waste of time.					
15.	Online videos helped me do better on assignments/exams.					
16.	My reviews of online videos improved my performance in the subject.					
17.	The lecturer's links to online videos were valuable to my learning in this subject.					
18.	Online videos are an asset to this subject.					
19.	I would recommend video-assisted subjects to anyone taking this subject.					

Section B:

Please answer the following questions carefully. Feel free to write as much as you wish. No required structure or formatting is needed.

In your opinion, have the online video experiences prepared you for a better learning experience? If so, how?

20. Do you watch the videos whenever a new one is posted? Yes ☐ No ☐

21. Do you watch the videos only when you have a question about an assignment?

Yes ☐ No ☐

22. Do you watch the videos more than once? Yes ☐ No ☐

23. How would you rate the number of times using videos provided for the subject per week?

Appendix C: Student's Interview Questions

Student:	_____	**Interview time & date:**	_____
Venue:	_____	**Email:**	_____
Tel:	_____	**Gender:**	_____
Age:	_____	**School:**	_____
Subject:	_____		

1) How often do you use the internet? How much time on average do you spend online each week?

2) Tell me how you use the technology and ICT features to support your learning.

3) What sort of online resources/devices/things/tools have you found helpful in your study? Do you have a preference among them?

4) What learning mode suits you the most (online learning/blended learning/ or traditional face to face learning)? Why?

5) Do you like watching online videos? If so, how often do you watch them? If no, why?

- How do you access videos: Computer? Phone? iPad?
- How many times per week do you watch the online videos provided for the subject?
- Do you watch the videos whenever a new one is posted? Why? Why not?
- Do you watch the videos when you have a question about an assignment? Why? Why not?

6) Do you think that featuring online video is a good learning supplement? Why/not? (if no, what didn't work well for you?)

7) What are some of the things/activities you experienced via online videos?

8) Can you describe in what way online videos were used by your lecturers during your program of study?

9) Was the content of the online videos appropriate for the topic being studied? If so, how? If no, why?

- How do you think online videos can be used in the subject to make a difference in your learning?
- Do you think that online videos can help you complete the subject successfully? Why or why not?
- Do you think the use of online videos enhanced your learning experience? In what way? Examples.
- Do you think that online videos have made you more interested in the subject? Examples please.
- Do you think that online videos engaged you more on the task? If so, how? Examples. If no, why?
- What can the lecturer do to address your perceptions and encourage your engagement with the online videos used/implemented in the subject?

10) A. What are the advantages that you have encountered of using online videos in the subject?
B. Do you think you would benefit from online videos as part of a blended learning program?

11) Describe your level of satisfaction with the online videos in the subject.

- What do you believe influenced your satisfaction the most?

12) How do you feel online videos impact your learning outcomes?

- What sort of learning outcomes have been achieved? Examples please.

13) How would you describe your talents/abilities? Describe your ideal learning environment.

14) To what extent do the online video materials implemented by lecturers, suits your talents/abilities? (Can you please explain? Can you please give examples?)

15) In your opinion, how could the subject online videos be modified to have better met your talents/abilities and needs?

16) Do you think subject videos could be better used to assist students be more successful in their studies? If so, how? In what way do you think they could be used?

17) Are there any other ways you think online video features could have been used?

18) Are there any changes you'd like to see in the way online videos are used in the subject?

19) Do you have any suggestions or recommendations to improve the application of online videos or to make the use of online videos more effective for students?

20) Have there been any difficulties or challenges in using the online videos? Could you explain what these challenges have been?

Appendix D: Lecturer's Interview Questions

Name: _____
Fac/Dep't: _____
Email: _____
Tel: _____
Campus: _____
Age: below 35 ☐ 35-45 ☐
45-55 ☐ Above 55 ☐

Office Location: _____
Academic Rank: _____
Date & Time of Interview: _____
Name of the subject: _____
Gender: Male ☐ Female ☐

1) How long have you been teaching at university level? (Other levels?)
2) How long have you been teaching face-to-face subjects? Online subjects? [Skip Qs 4a & **7** if not teaching online]
3) What subjects (and levels) have you taught at university level?
4) A. Could you tell me the approaches you currently use to teach online subjects? B. What about face to face subjects?
5) What ICT features do you use to make online and face-to-face learning more useful and valuable to students?
6) Would you recommend technology usage for instructional/ educational purposes to other lecturers?
7) After you experienced teaching via online modes, do you prefer to teach fully online, in a classroom, or to combine the two approaches (blended)? Why?
8) Could you please tell me your definition and understanding of the term 'intelligence'? How do you recognise intelligence in your students?
9) What is your understanding of the theory of multiple intelligences?
10) Do you use online videos in your teaching? If so, what are different types and purposes for online videos that you use? If no, why? [Skip Qs 11& 12 if no]
11) Why do you integrate online videos in support of your learning and teaching? Please discuss the advantages and disadvantages of using online videos.
12) To what extent do the online video materials you use address different intelligence types in your students? (Can you please explain? Can you please give examples?)
13) How do you feel online videos can impact student's engagement? • Do you think that online videos engaged them more on the task? If so, examples. If no, why? • Do you think that online videos have made them more interested in the subject? Examples. • How do you feel online videos can impact student's learning outcome? • What sort of learning outcomes have been achieved? Examples. • Do you think that online videos can help students complete the subject successfully? Why or why not? • Do you think online videos can impact student's learning experience? If so, how? If not, why?
14) Have there been any difficulties or challenges in implementing the online videos? Could you explain what these challenges have been? • Were these challenges resolved? If so, how? • If not, when and how do you anticipate resolution?
15) Do you have any suggestions or recommendations to improve the application of online videos or to make the use of online videos more effective for lecturers and learners?
Questions for Lecturer's running Flipped Classroom Approach
15) Do you have any suggestions or recommendations to improve the application of online videos or to make the use of online videos more effective for lecturers and learners?
16) What is your understanding of the 'flipped classroom' approach? From your perspective, what it does to offer for learning and teaching?
17) Could you please discuss any advantages of integrating flipped classroom in learning and teaching? • Is this program effectively meeting your students' needs? Could you provide Examples? • Do you think that they are working harder on the task after integrating flipped classroom? Examples.
18) What would be some of the challenges in implementing the flipped classroom? • How did you get around that? Explain.
19) Are there any specific learning outcomes by the use of flipped classroom? Could you provide some examples? • What are you hoping to achieve from implementing 'FL' in your teaching?

Appendix E: Ethics Approval

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Appendix F: Participant Information Form

INFORMATION SHEET

PROJECT TITLE: **"Multiple Intelligences and Network Affordances: Can videos enhance students' perceptions of their learning experience, learning outcomes, and subject engagement?'**

Multiple intelligences and network affordances: Can videos enhance students' perceptions of their learning experience, learning outcomes, and subject engagement?

You are invited to take part in a research project about students and lecturers' perceptions of the use of videos to facilitate students' experiences, engagement and learning outcomes in online, hybrid and face to face modes of communication, with respect to the effect of multiple intelligences. The study is being conducted by **Karim Hajhashemi** and will contribute to the **PhD degree in Education** at James Cook University.

If you agree to be involved in the study, you will be invited to be interviewed. The interview, with your consent, will be audio-taped, and should only take approximately 1 hour of your time. The interview will be conducted at the School of Education at James Cook University, or a venue of your choice.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice.

Your responses and contact details will be strictly confidential. The data from the study will be used in research publications and reports. You will not be identified in any way in these publications.

If you have any questions about the study, please contact **Karim Hajhashemi** and **Professor Neil Anderson.**

Principal Investigator:
Karim Hajhashemi
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Supervisor:
Name: Professor Neil Anderson
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James Cook University
Phone:
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Email: Neil.anderson@jcu.edu.au

If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
James Cook University, Townsville, Qld, 4811
Phone: (07) 4781 5011 (ethics@jcu.edu.au)

INFORMATION SHEET

PROJECT TITLE: **"Multiple Intelligences and Network Affordances: Can videos enhance students' perceptions of their learning experience, learning outcomes, and subject engagement?'**

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If you agree to be involved in the study, you will be invited to be interviewed. The interview, with your consent, will be audio-taped, and should only take approximately 1 hour of your time. The interview will be conducted at the School of Education at James Cook University, or a venue of your choice. There are also two online questionnaires that you may complete. The first questionnaire asks you about your Multiple intelligences profile. You are required to complete the likert-type questionnaire by placing a number from 1 to 5 next to each statement as you feel accurately described you. The second questionnaire includes some demographic information. It also attempts to elicit your level of agreement with statements related to the use of online videos in different modes of instructions. Furthermore, it includes some open-ended questions to give you a clear voice on issues, experiences and perceptions of online videos utilized in different modes of instruction.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice.

Your responses and contact details will be strictly confidential. The data from the study will be used in research publications and reports. You will not be identified in any way in these publications.

If you have any questions about the study, please contact **Karim Hajhashemi** and **Professor Neil Anderson.**

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If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
James Cook University, Townsville, Qld, 4811
Phone: (07) 4781 5011 (ethics@jcu.edu.au)

Appendix G: Participant Consent Form

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has been removed

Appendix H: Gift Cards' Flyer

Participants Wanted

Looking for a chance to Win!

Win Gift Cards

Two options to Win:

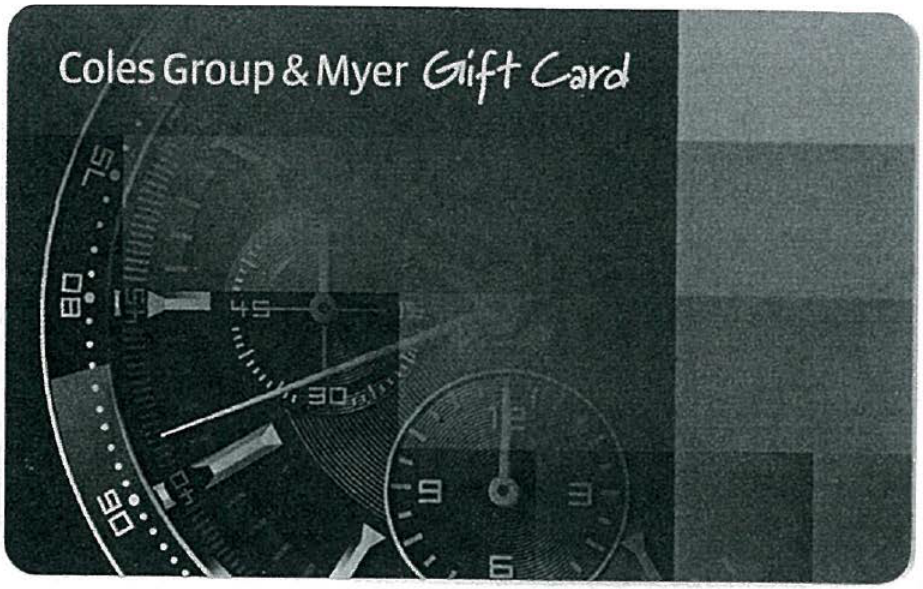
Option 1: Complete two online surveys.

Each student participating in **Option 1** will receive **one** chance to go into the draw for a **$50 Gift Card**.

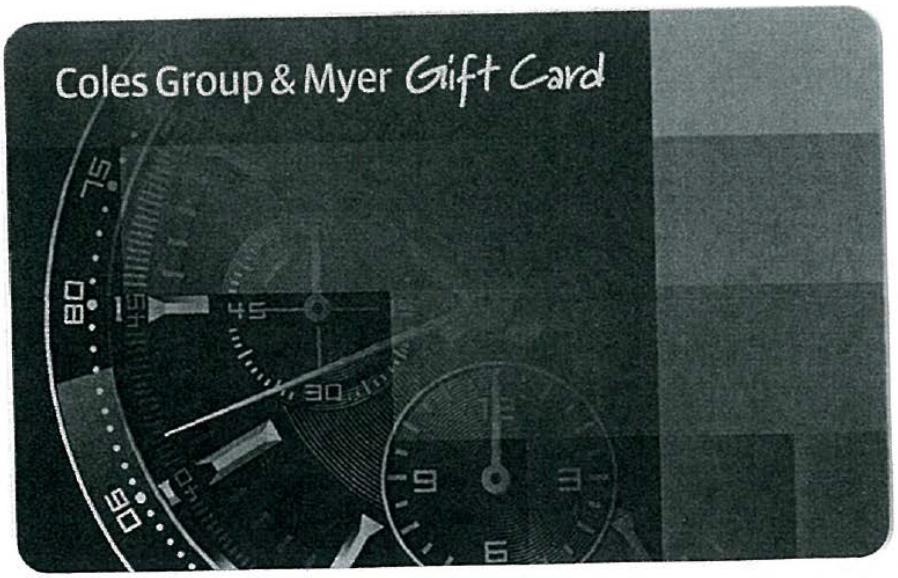
Option 2: • Complete both surveys as required in Option 1, and an approximately 40 minute interview at a mutually agreed time.

For **Option 2** each participating student will receive **three** chances in the draw for one of **three $50 Gift Cards**

Appendix I: Gift Cards



Card Number	Date of Issue	Access Pin	Value	Ref No.	Serial	
6273 3538 4489 80154	07/15		$50.00	0332	284549276	000011



Card Number	Date of Issue	Access Pin	Value	Ref No.	Serial	
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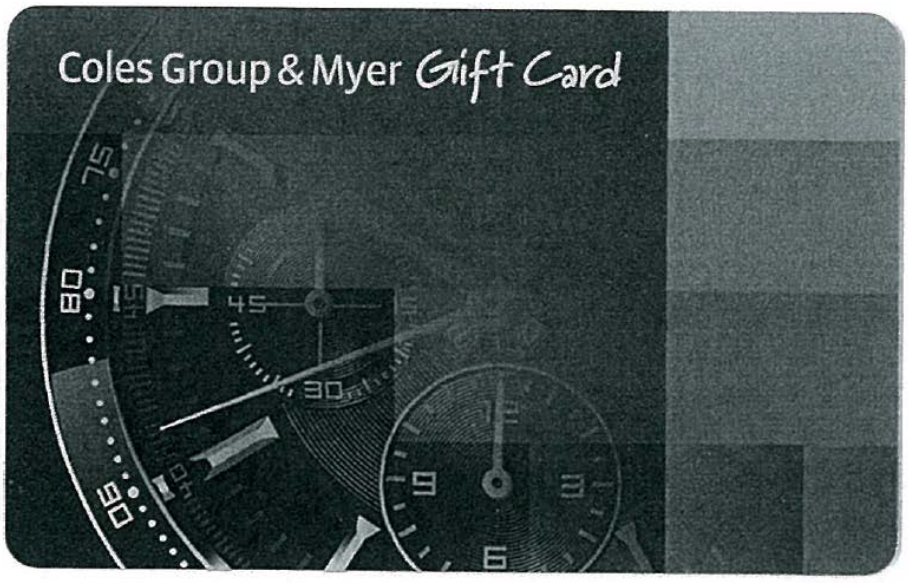

Card Number	Date of Issue	Access Pin	Value	Ref No.	Serial	
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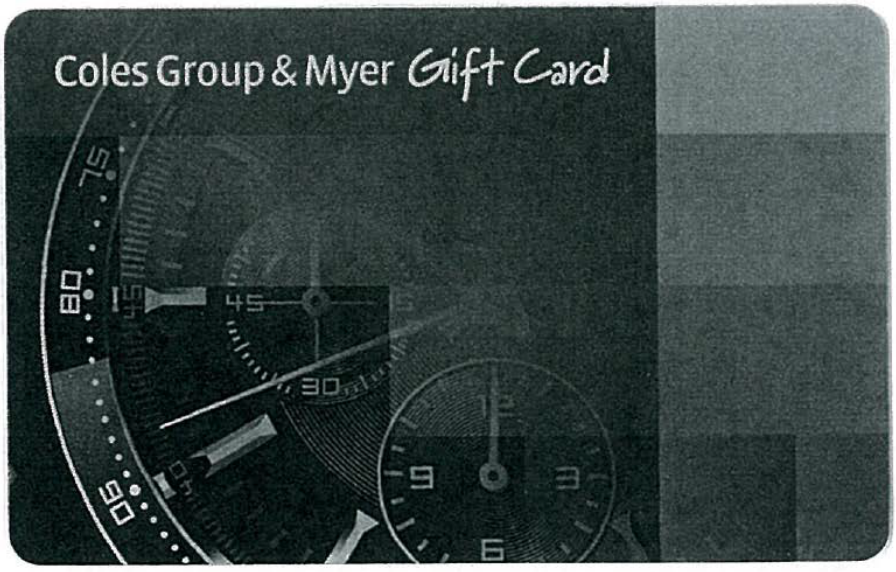

Card Number	Date of Issue	Access Pin	Value	Ref No.	Serial	
6273 3538 4459 66263	07/15		$50.00	0825	284549278	000013

Appendix J: Age categories based on Levinson's theory (Peterson, 2014, p. 478)

Developmental Era	Frequency
Pre-adulthood	0-23
Early-adulthood	24-45
Middle -adulthood	45-65
Era of late-adulthood	66 and above

Appendix K: List of some useful Links for students

Glogster	www.glogster.com (Multimedia Posters)
Tagxedo	www.tagxedo.com
101 Ways to Use Tagxedo	http://bit.ly/101tagxedo
PhotoPeach	http://photopeach.com/
Second Life	http://secondlife.com (Avatar)
Storybird	www.storybird.com
The Hungry Alien	http://storybird.com/books/the-hungry-alien-9/
Healthy, Healthy Food for You	http://storybird.com/books/healthy-healthy-food-for-you/
Voki	www.voki.com (Avatar)(Speaking characters for education)

LIST OF PUBLICATIONS

Publications:

A. *Books:*

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B. *Journals:*

Published:

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Accepted:

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Under Review:

Hajhashemi, K., Caltabiano, N., & Anderson, N. (submitted). Integrating Digital Technologies in the Classroom: Lecturers' views on flipped classroom approach.

Australian and International Journal of Rural Education. (Submission date: 13 August 2016)

Hajhashemi, K., Caltabiano, N., & Anderson, N. (submitted). Lecturers' perceptions and experience of integrating online videos in higher education. *Computers & Education*. (Submission date: 18 August 2016)

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Conference Proceedings

A. Full Papers:

Hajhashemi, K., & Caltabiano, N. (2016). *Blended learning: Uncovering challenges in implementing online videos in higher education*. Paper presented at the Taylor's 9th Teaching and Learning Conference (TTLC2016), 12-13 November 2016, Subang Jaya, Malaysia (in press by Springer).

Hajhashemi, K., Anderson, N., Jackson, C., & Caltabiano, N. (2014). *Online Learning: Increasing Learning Opportunities*. International Conference on Education and Social Sciences (INTCESS 14), 3-5 February, 2014 (pp. 239-246), Istanbul, Turkey. ISBN: 978-605-64453-0-9

Hajhashemi, K., Anderson, N., & Shakarami, A. (2013). *Network affordances through online learning: Increasing use and complexity.* Conference Proceedings of the 4th International Conference on New Horizons in Education, Volume 2/3 (pp. 185-190), 25-27 June, 2013, Rome, Italy. ISSN: 2146-7358

B. Abstracts:

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B. Poster:

Hajhashemi, K., Anderson, N. & Caltabiano, N. (2014, November 3rd). *Tech that teaches: The potential of videos to enhance learning and teaching in Higher Education.* Poster presented at the FAESS annual meeting: Reimaging Frontiers in Teaching and Learning, Research and Engagement, Townsville, Australia.

Accepted Conferences:

Hajhashemi, K., & Caltabiano, N. (12-13 November 2016). *Blended learning: Uncovering challenges in implementing online videos in higher education*. Paper will be presented at the Taylor's 9th Teaching and Learning Conference (TTLC2016), Subang Jaya, Malaysia and the full paper will be published by Springer.

Hajhashemi, K., Caltabiano, N., & Shakarami, A. (4 December 2016). *Flipped videos: A key component to enhance learning outcomes in an educational setting*. Paper will be presented at the 4th Conference on Applied Research in Language Studies, Tehran, Iran and the full paper will be published by ISC.

Conference & Poster Presentations:

12-13 November 2016	Taylor's 9th Teaching and Learning Conference (TTLC2016), Subang Jaya
23-26 April 2015	International Conference on Education in Mathematics, Science & Technology (ICEMST 2015), Antalya, Turkey
14-17 April 2015	15th International Academic Conference (IISES 2015), Rome, Italy
3 November 2014	FAESS annual meeting: Reimaging Frontiers in Teaching and Learning, Research and Engagement, Townsville, Australia
3-5 February 2014	International Conference on Education and Social Sciences (INTCESS 14), Istanbul, Turkey
25-27 June 2013	International conference on new horizons in education (INTE), Rome, Italy
13-14 February 2013	The 7th National and the 4th International Conference on e-Learning and e-Teaching, Shiraz, Iran
8-10 October 2012	The 9th Malaysian International Conference on English Language Teaching (MICELT), Ipoh, Perak, Malaysia