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Reviewed By Gulten KARTAL
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Dear TOJDE Readers,

Welcome to Volume 19 Number 4 of TOJDE,

There are 13 articles and 2 book reviews in October 2018 issue. 34 authors write the articles from 10 different countries. These countries are Brazil, Germany, Ghana, India, Indonesia, Kenya, Malaysia, Philippines, Turkey and USA.

A META ANALYSIS OF FACTORS AFFECTING PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE IN THE ADOPTION OF E-LEARNING SYSTEMS is the title of 1st article. The first article is written by Rahmi BAKI, Burak BIRGOREN, and Adnan AKTEPE. In the study, the authors analyze 203 studies investigating the e-learning acceptance of the users through the Technology Acceptance Model (TAM), and they find the most widely accepted hypotheses, affecting Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) in the literature.

The title of the 2nd article is CORPORATE DISTANCE EDUCATION: AN APPLIED UNDERSTANDING OF ITS RESISTANCE FACTORS. Dr. Marcus BRAUER, Luiz Eduardo ALVES, Paulo Roberto da Costa VIEIRA, Alberto Luiz ALBERTIN, and Marcello ROMANI-DIAS are the authors. In this study, the authors identify and analyze the main factors that explain the resistance to distance education in corporate education in a military institution. The important result of the study shows that the self-efficacy and performance expectation dimensions directly and positively influence the resistance to the distance education in the corporate education.

The 3rd article is written by Dr. Anshu MIGLANI, Arshish K. AWADHIYA, Nisha SINGH, K. GOWTHAMAN, and Gayatri KANSAL. POLICY RECOMMENDATIONS FROM EMPLOYERS FOR ENHANCING SKILLS THROUGH ODL is the title of the article. The study seeks recommendations for the Open and Distance Learning policy from industry to ensure learners graduating from open and distance learning system are employable and are at par with those who have graduated from conventional system. The authors recommend stressed on enhancing the quality of ODL education and skill development through collaboration between academia and industry and use of technology.

The 4th article, titled THE USE OF ICT TOOLS IN E-MENTORING: A CASE STUDY, is written by Sakine ONGOZ. The study is a case study and investigates the use of information and communication technologies in the e-mentoring process. The findings indicate that e-mail, social networking, phone conversations, SMS, instant mobile technologies are utilized to provide interaction in the e-mentoring process, and also instant messaging and social networking sites are used more effectively by participants in their daily lives.

The 5th article’s title is USING VIRTUAL MOBILITY AND DIGITAL STORYTELLING IN BLENDED LEARNING: ANALYSING STUDENTS’ EXPERIENCES. The study is written by Dr. Daniel OTTO. This case study mentions a course used digital storytelling as a teaching method, which is an interdisciplinary co-operation between a German and a Tunisian distance university. The participants of the study consist of the students from various academic disciplines to study a course about climate change. The results of the study present stimulating teaching method, embedded in a suitable course design is crucial for the learning success of the students.

Beatrice Asante SOMUAH, Florence Muthoni ITEGI, Samson Ikinya KARIUKI are the authors of the 6th article. FINANCIAL ROLES AND ITS EFFECT ON PERSISTENCE OF FEMALE STUDENTS IN DISTANCE EDUCATION PROGRAMS IN GHANA is the title of the article. The focus of the study is to find out the extent to which financial responsibilities affect the persistence of female students accessing higher education through distance education.
programs. The findings indicate that financial roles have positive effect on persistence of the female students.

The 7th article is written by Gokhan AKCAPINAR, and Alper BAYAZIT. The title of the study is INVESTIGATING VIDEO VIEWING BEHAVIORS OF STUDENTS WITH DIFFERENT LEARNING APPROACHES USING VIDEO ANALYTICS. The study is aimed at comparing the video viewing behaviors of students with deep and surface learning approaches. The study analyzes video viewing behaviors of the students with deep and surface learning approaches by using video analytics. The study findings indicate that the students with surface approach made a statistically forward seek over to the students used deep learning approach while watching the video.

ONLINE LEARNING AND HIGH SCHOOL STUDENTS: A CULTURAL PERSPECTIVE is the title of 8th article, written by Salih BARDAKCI, Omer ARSLAN, and Yafes CAN. The study is aimed at investigating the insights of high school students regarding their online learning experiences in the margin of cultural considerations. The findings revealed that the majority of the students benefited from online discussion activities, as well as posed numerous suggestions.

The 9th article is written by DERLINA, Juhriyansyah DALLE, Sutarto HADI, Ariffin ABDUL MUTALIB, and Candra SUMANTRI. The title of this article is SIGNALING PRINCIPLES IN INTERACTIVE LEARNING MEDIA THROUGH EXPERT’S WALKTHROUGH. The study analyzes the impact of signaling principles on the effective use of interactive learning media by using the iterative triangulation methodology. The results of the study revealed that although the prototype was designed by involving users, experts still discovered a number of flaws in the exercises as a result of not properly applying the signaling principles.

OPEN EDUCATIONAL RESOURCES BASED ONLINE TUTORIAL MODEL FOR DEVELOPING CRITICAL THINKING OF HIGHER DISTANCE EDUCATION STUDENTS is the title of the 10th article. Dr. Ucu RAHAYU and Dr. Amalia SAPRIATI is the authors of this article. The study is aimed at developing a prototype of learning for the achievement of critical thinking skills of Higher Distance Education students through the utilization of open educational resources. The results of the study indicate that critical thinking can be developing through the utilization online tutorial activities.

The 11th article is written by Francis KIBARU. The title of this article is SUPPORTING FACULTY TO FACE CHALLENGES IN DESIGN AND DELIVERY OF QUALITY COURSES IN VIRTUAL LEARNING ENVIRONMENTS. This qualitative study highlights to identify online courses’ challenges and emerging solutions. The important result of the study is a need for an academic institution to dynamically adapt its mission and culture to the evolving nature of online teaching and learning.

Ramualdo Atibagos MABUAN is an author of the 12th article. The title of this article is CONFESSIONS OF A MOOCER: AN AUTOETHNOGRAPHIC INQUIRY ON ONLINE DISTANCE EDUCATION. This article is aimed at examining aspects of our memories, perspectives, and experiences in successfully completing a course in a MOOC platform.

The last 13th article is written by Dr. Savita GUPTA and Liyagat BASHIR. The title of this article is SOCIAL NETWORKING USAGE QUESTIONNAIRE: DEVELOPMENT AND VALIDATION IN AN INDIAN HIGHER EDUCATION CONTEXT. This study is aimed at clarifying the construct of social networking via social networking usage questionnaire. The findings indicate that social networking usage can be decomposed into four factors. These are academic, socialization, entertainment and informativeness.
There are two book reviews in this issue. MARKETING STRATEGIES FOR HIGHER EDUCATION INSTITUTIONS: TECHNOLOGICAL CONSIDERATIONS AND PRACTICES is the title of the 1st book. The editors of this book are Purnendu TRIPATHI and Siran MUKERJI. The reviewer is Nur OZER CANARSLAN.

Other book’s title is CULTURE AND ONLINE LEARNING: GLOBAL PERSPECTIVES AND RESEARCH. Insung JUNG and Charlotte Nirmalani GUNAWARDENA are the editors of this book. Gulten KARTAL is the reviewer.

Hope to meet you in the next issue of TOJDE.
Cordially,

Dr. T. Volkan YUZER
Editor-in-Chief
A META ANALYSIS OF FACTORS AFFECTING PERCEIVED USEFULNESS AND PERCEIVED EASE OF USE IN THE ADOPTION OF E-LEARNING SYSTEMS

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ABSTRACT

The full potential of e-learning, a trend that is of growing importance lately, will not be reaped unless the users fully utilize the system, triggering extensive research to be conducted in order to provide valuable insight on a myriad of variables influencing user acceptance in e-learning systems. The main purpose of the study is to determine the factors that affect the intention of users to use e-learning and to get results which can guide system developers and researchers. In accordance with this purpose, 203 studies investigating the e-learning acceptance of the users through the Technology Acceptance Model (TAM) were found in the literature. In those studies, variables which are suggested to determine Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) and results of related hypotheses are analyzed. Finally, a model is proposed. In this model, the most widely accepted hypotheses, affecting PU and PEOU according to the literature are included in the original TAM. As a result; it determines Self Efficacy-PEOU, Subjective Norm-PU, Self Efficacy-PU, Interaction-PU, Enjoyment-PEOU, Anxiety-PEOU, Enjoyment-PU, Compatibility-PU, Subjective Norm-PEOU and Interaction-PEOU as variables that have statistical significance in users’ PU and PEOU, respectively. Moreover, the study examines the relationship between the User Satisfaction and original TAM variables, and proposes the Acceptance and Satisfaction Model for E-Learning (ASME) as a model to best explain the dependent variables described above.

Keywords: E-learning, Technology Acceptance Model, perceived ease of use, perceived usefulness, user satisfaction.

INTRODUCTION

Recent and exponential developments in information and communication technologies have caused significant shifts in both corporates’ and users’ working practices, resulting in individuals being introduced to new paradigms such as e-government, e-commerce, online banking and e-learning, the last being the most wide-spread and substantial advancement in the education sector.
E-learning can be described as the utilization of telecommunications technologies to transfer information in education and training activities (Sun, Tsai & Finger, 2008). E-learning connects all education activities conducted by individuals and groups, both online and offline, through networked or standalone devices, allowing users to access a learning platform without the restriction of time and space (Naidu, 2006). The system’s competitive advantage stems through its ability to allow users to direct and customize content via eliminating a one-size-fits-all approach to education and training (Pantazis, 2002), facilitating a learning platform that transcends time and space (Trentin, 1997).

Despite having notable advantages, under-utilized systems can pose a problem for organizations (Venkatesh & Davis, 2000), because information systems are known to improve organizational performance only when they are used in their full capacity (Mathieson, 1991). For one to be able to better forecast, assess and enhance user acceptance, the need to better understand why information systems are accepted or rejected is vital (Davis, Bagozzi & Warshaw, 1989). As a consequence, researchers have benefitted from various theories to identify the factors that explain users’ intention to use e-learning, the most widespread being TAM (Sumak, Hericko & Pusnik, 2011). TAM is a robust forecast model that is extensively used to assess users’ perceptions of technology acceptance (Hussein & Saad, 2016).

The model, developed to estimate the adoption and utilization of information technologies, puts forward that the individuals’ intention to use information technologies has its foundation in two basic (PU and PEOU) beliefs (Venkatesh & Bala, 2008). In the model, external variables allow one to understand the factors that most significantly influence PU and PEOU, while offering guidance in developing action plans that will increase usage (Legris, Ingham & Collerette, 2003). TAM’s main objective is to lay upon a basis to monitor the effect of external variables in beliefs, attitudes and actions (Davis, Bagozzi & Warshaw, 1989), leading to many researchers testing and developing the model with different external variables. A systematic evaluation of all these studies that predicate upon TAM to assess users’ e-learning acceptance, as well as an analysis of the relationship of PU and PEOU with all the external variables investigated in the literature will provide valuable insight to researchers and system developers.

This work examines 203 different studies that explore users’ e-learning acceptance and identifies 129 external variables to explain PU/PEOU, leading to the testing of 220 different hypothesis for 714 times. It is being aimed that an extension to TAM is proposed after a careful examination of external variables with beliefs.

**TECHNOLOGY ACCEPTANCE MODEL**

TAM is a theoretically validated, robust model that aims to explain computer acceptance determinants (Davis, Bagozzi & Warshaw, 1989) and comprises of five basic components; Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Using (A), Behavioral Intention to Use (I) and Actual Use (A). Being an adaptation of Theory of Reasoned Action (TRA), TAM identifies two main belief structures, PU and PEOU as attitude determinants of both the use of intention and actual use of information technologies (Taylor and Todd, 1995). The model proposes external variables to explain PU and PEOU, while the latter determines PU and A, the former establishes A and I. Additionally, A affects I, and I influences U (As shown in Figure 1).
Figure 1. Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989)

TAM proposes that individuals’ intention to use information technologies are determined by two belief structures: PU, the belief that one’s utilization of information technologies will enhance her work performance and PEOU, the belief that no significant effort will be spared to use information technologies (Vankatesh & Bala, 2008). PU and PEOU are two theoretical structures that are the basic determinants of systems usage (Davis, 1989).

In most of the empirical work conducted, it has been shown that PU is a robust determinant of adoption intention, while PEOU has a relatively less consistent effect (Venkatesh & Davis, 2000). The ‘attitude’ variable is expected to partially mediate the effect of these beliefs on intention to use. Nonetheless, research show that attitude is not a significant facilitator in explaining the causal relationship between belief structures and intention to use. (Davis, Bagozzi & Warshaw, 1989).

According to TAM; PU and PEOU mediates between the effects of various external variables on the intention to use (Vankatesh & Davis, 2000). Even though TAM and other user acceptance models have been validated empirically, researchers still add new external variables to improve the limited specificity and explanatory utility of these models (Tarhini, Hone & Liu, 2013.b). To improve the explanatory power of the model, incorporating additional variables or integrating it with other information technologies models is crucial (Hu, Chau & Sheng, 1999).

Researchers are expected to extend and assess theoretical acceptance models with various external variables, especially in the field of e-learning. Correlation with TAM is often supported in e-learning acceptance studies, since the model proves effective in the investigation of e-learning acceptance technologies (Sumak, Hericko & Pusnik, 2011). This study evaluates previous research that utilized TAM to assess e-learning acceptance; and examines the relationship between additional external variables analyzed in these research with belief structures.

RESEARCH METHOD

A quantitative meta-analysis is conducted to identify the users’ perception of usefulness and ease of use in e-learning systems. Previous work that benefitted from TAM to examine the acceptance or usage of e-learning technologies or systems have been carefully evaluated, resulting in the selection of 203 valid studies to be analyzed. These work comprise of 177 published journal papers, 22 conference papers and 4 PhD thesis. Studies are obtained through applying key words as Technology Acceptance Model, TAM 2, TAM 3, Perceived Usefulness, Perceived Ease of Use, Behavioural Intention to Use for TAM; and E-Learning, Learning Management System, Web-Based Learning, Online Learning, Distant Education, Moodle, Second Life for e-learning systems.

Following the selection of studies to be analyzed; publications are grouped by their respective countries, participants, TAM components utilized and variables tested against PU and PEOU (As shown in Appendix 1). Studies in the scope of this work are conducted in 41 different countries, respectively in, Taiwan (44), Malaysia (16), Spain (15), China (14), United States of America
Seven of these publications are conducted in multiple countries (Abbas (2016), Arenas-Gaitán, Ramírez-Correa & Rondan-Cataluña (2011), Capece & Campisi (2011), Ramírez-Correa Arenas-Gaitan & Rondan-Cataluña (2015), Tajudeen, Basha, Michael & Mukthar (2012), Zhao & Tan (2010). In addition, Armenteros, Liaw, Fernandez, Díaz & Sanchez (2013) carried out their research with instructors from various countries. When these work are grouped by seven main geographical regions (as shown in Table 1), it has been seen that the majority of research conducted are clustered in East Asia and Pacific (104), Europe and Central Asia (41) and Middle East and North Africa (32), as the distribution of research is remarkably skewed towards East Asian countries like Taiwan, Malaysia, China, Hong Kong and South Korea.

The work spanned in this study is also classified based on the e-learning user types that the models developed are tested for. 152 of these research examines the e-learning acceptance behaviors of students in primary, secondary and tertiary stages. Employees from different professions (construction professionals, managers, nurses, blue-collar workers, etc.) are studied in 28 publications and 16 papers span the behaviors of education professionals (academics, faculty members, instructors, lecturers and teachers). In addition, 5 of these papers extend their scope to a wider range of citizens. A model developed in one of these studies is tested both on educators and students while another paper fails to give sufficient information regarding the user base studied.

**Table 1. Distribution of Research by Region (For Studies Conducted in Multiple Countries, All Countries in Question Are Taken into Consideration)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia &amp; Pacific</td>
<td>104</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>41</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>32</td>
</tr>
<tr>
<td>North America</td>
<td>16</td>
</tr>
<tr>
<td>Latin America &amp; the Caribbean</td>
<td>7</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>6</td>
</tr>
<tr>
<td>South Asia</td>
<td>3</td>
</tr>
<tr>
<td>International</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>210</strong></td>
</tr>
</tbody>
</table>

Majority of the information technologies acceptance research that takes the model as a reference does not include all of TAM’s five main components due to various reasons. For instance, it is still being debated whether A acts as a robust mediator of the effect of the belief variables on I, as TRA and TRM proposes (Davis, Bagozzi & Warshaw, 1989). PU, PEOU and I ensue as the most extensively used variables in the research spanned (as shown in Table 2).

**Table 2. TAM Variable Combinations Used in Literature Reviewed**

<table>
<thead>
<tr>
<th>TAM Variable Combinations Used</th>
<th>Number of Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU-PEOU-I</td>
<td>77</td>
</tr>
<tr>
<td>PU-PEOU-A</td>
<td>51</td>
</tr>
<tr>
<td>PU-PEOU-I-U</td>
<td>31</td>
</tr>
<tr>
<td>PU-PEOU-A-I-U</td>
<td>12</td>
</tr>
<tr>
<td>PU-PEOU-A</td>
<td>7</td>
</tr>
<tr>
<td>PU-PEOU-U</td>
<td>7</td>
</tr>
<tr>
<td>Others</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>203</strong></td>
</tr>
</tbody>
</table>
129 different external variables to be tested as determinants of PU and PEOU are incorporated into the models studied in all these aforementioned research. Since this study’s main objective is to identify the factors that affect user beliefs in e-learning systems, relationships that locate these external variables as the antecedents of A, I, U or the interdependences between dependent variables are not within the scope of this work. The effects of 129 different external variables on PU and PEOU are tested in 220 different hypotheses in 203 publications studied (As shown in Appendix 2). In some of the cases, researchers have chosen to examine the impact of these independent variables in only one of the belief structures, where 220 different hypotheses are tested 714 times.

As a result, the hypotheses examined most frequently are ordered as follows: Self Efficacy-PEOU (71), Self Efficacy-PU (50), Subjective Norm-PU (33), Anxiety-PEOU (19), Interaction-PU (18), Experience-PEOU (18), Enjoyment-PEOU (16), Experience-PU (14), Interaction-PEOU (12), Enjoyment-PU (12) and Subjective Norm-PEOU (12). Moreover, it has been observed that some external variables are tested relatively more frequently against the belief structures than their counterparts. For instance, Subjective Norm’s influence on PU and Anxiety’s predictive value on PEOU are examined more frequently than the variable’s effect on PEOU and PU, respectively.

Among the research studied, the relationship between Self Efficacy and PEOU ranks as the most validated and accepted with 58 instances, followed by Subjective Norm-PU (27), Self Efficacy-PU (24), Interaction-PU (15), Enjoyment-PEOU (13), Anxiety-PEOU (12), Enjoyment-PU (12), Compatibility-PU (10), Subjective Norm-PEOU (9) and Interaction-PEOU(8). The most frequently accepted relationships in these research are incorporated into the ASME proposed in this study.

Factoring in the relatively sporadically validated hypotheses into the model can pose a threat to its credibility. For example, three of the publications examined find out Information Quality to significantly influence users’ PU with a positive coefficient. Nevertheless, these tests do not provide a solid foundation on the validity of this relationship and the scarcity makes it difficult to find consistent questionnaire items on the variable studied.

This study reviews and analyses the literature based on the hypotheses between independent variables and belief structures, rather taking into account the former in an absolute basis, proposing an extended model as a result. The reason why the study’s approach is predicated on the most validated hypotheses rather than the external variables themselves stems from the fact that, if the most frequently used regressors were taken into account, the Experience variable would have to be incorporated into the model. Nevertheless, in the literature review conducted, of the 18 publications that examine the relationship between Experience and PEOU only 8 of them explain a significant pattern. The statistic is a mere 14 to 5 for the relationship between Experience and PU. Therefore, independent variables that have no significant effect on belief structures, despite having been frequently examined, are eliminated from this study.

Another issue that one has to put forward is that, while an external variable is shown to have a significant effect on one belief structure, a similar relationship may not be pertinent for the one with the other belief variable. For example, the hypothesis that Anxiety being a significant determinant of PEOU has been accepted in 12 of the 19 studies conducted. On the other hand, Anxiety’s influence on PU bears significance in only 3 among 8 models. This urges the study’s research method to only take into account external variables shown to have significant effect on PU and PEOU, rather than the frequency in which they are incorporated in the models spanned.

In conclusion, this study embeds into ASME the external variables that are shown to have significant effects on e-learning users’ perception of Usefulness and Ease of Use in the literature review conducted, helping increase the model’s explanatory power.
ACCEPTENCE AND SATISFACTION MODEL FOR E-LEARNING (ASME)

Following the literature review, hypotheses that are most frequently accepted in tests where external variables are examined against belief structures are incorporated in the model. These can be listed as follows: Self Efficacy-PEOU, Subjective Norm-PU, Self Efficacy-PU, Interaction-PU, Enjoyment-PEOU, Anxiety-PEOU, Enjoyment-PU, Compatibility-PU, Subjective Norm-PEOU and Interaction-PEOU. Apart from 6 regressors and 10 hypotheses, the model also includes PU, PEOU and I, variables embodied in original TAM. Satisfaction, a factor that was not included in the original TAM has also been added to the model.

Research Hypotheses Based on External Variables

Self Efficacy
Self Efficacy is an individual’s own perception of her talent of accomplishing a duty (Bandura, 1982). From an e-learning point of view, this description can be paraphrased as an individual’s self perception of her talent in receiving education via utilizing the e-learning system. In this meta-analysis, it has been assessed that Self Efficacy is the most widely used and accepted determinant of users’ Ease of Use perceptions. Moreover, the hypothesis that Self Efficacy has a significant effect on PU is the second most examined and the third most accepted in the researched reviewed within the scope of this study. Self-Efficacy Theory predicts that individuals perform better when they believe they possess the necessary talents (Barling & Beattie, 1983). Hence, it is expected that users with a higher degree of Self-Efficacy have stronger intentions to adopt e-learning systems (Hsia, Chang & Tseng, 2014).

Research show that Self Efficacy directly influences the e-learning users’ perception of Ease of Use. In the literature review conducted, 58 of the 71 publications that examine Self-Efficacy’s level of influence on PE for e-learning systems confirm the presence of a significant and positive relationship. This can be explained by the relatively higher level of perseverance among users with higher levels of Self-Efficacy upon facing problems. 24 of these work accept the hypothesis that there is a positive correlation between Self-Efficacy and PU. It is expected that e-learning systems’ users with high levels of Self-Efficacy will believe in benefitting from the system without facing a major difficulty. Therefore, following hypotheses can be put forward:

- Hypothesis 1: Self-Efficacy has a positive and significant effect on PU for e-learning systems.
- Hypothesis 2: Self-Efficacy has a positive and significant effect on PEOU for e-learning systems.

Subjective Norm
Subjective Norm is defined as an individual’s perception of whether the majority of people important to the individual think she should perform the activity in question (Venkatesh & Davis, 2000). It can also be referred to as the social pressure perceived on whether to perform the behaviour or not (Ajzen, 1991). From an e-learning based perspective, one can also characterize the paradigm as the social pressure one perceives on using e-learning systems (Agudo-Peregrina, Hernandez-García & Pascual-Miguel, 2014). Even though TRA theorizes Subjective Norm as a direct determinant of intention, TAM hypothesizes otherwise (Davis, Bagozzi & Warshaw, 1989). Subjective Norm and social impact are used interchangeably in various theories (Venkatesh, Morris, Davis & Davis, 2003), this study follows the same path.

Subjective Norm’s effect on e-learning systems’ users PU has been examined and accepted in an extensive array of research. In the literature reviewed within the scope of this work, 27 of the 33 publications testing Subjective Norm’s influence on users’ PU accept the hypothesis of a positive and significant relationship, which is the second most frequently accepted one among the 220 hypotheses covered. The social pressure on an e-learning
systems' user from her esteemed peers, instructors or family to use the aforementioned system may trigger the user's perception of the system's practicality.

The relationship between Subjective Norm and PEOU, despite having been tested less frequently, implies a positive and significant relationship as well. In 8 of the 12 publications studied, it has been accepted that Subjective Norm directly influences PEOU. E-learning systems' users thought that her esteemed peers should also benefit from the system may result in the perception of the convenience of the system. In light of all these views, one can propose the following hypotheses:

- **Hypothesis 3**: Subjective Norm has a positive and significant effect on PU for e-learning systems.
- **Hypothesis 4**: Subjective Norm has a positive and significant effect on PEOU for e-learning systems.

**Interaction**

The key aspects of learning processes can be listed as the interactions between students, between students and teaching staff as well as the collaboration in learning from these interactions (Abbad, Morris & Nahlik, 2009). Literature review suggests that increasing interaction results in higher motivation, boosts the level of satisfaction received from learning, causes a more optimistic view on learning, triggers effective learning and success (Donnelly, 2010). Interaction, as critical as in e-learning as it is in conventional learning processes. Interaction between students and teaching staff as well as among students is facilitated via the extensive utilization of e-mails, chat rooms, bulletin boards in e-learning systems (Pituch & Lee, 2006). Development of e-learning systems is mainly triggered by technological improvements that facilitate interactions among students (Abbad, Morris & Nahlik, 2009).

The hypothesis that interaction influences the e-learning systems' users' PU has been examined and accepted in 18 and 15 studies, respectively, the hypothesis ranking fourth among in the most frequently accepted hypotheses of the literature reviewed. Moreover, the relationship between Interaction and PEOU has been confirmed to have significance in 8 of the 12 publications spanned. It can be inferred that the advanced interaction level users build among themselves and with their instructors can have a direct and positive effect on their PU and PEOU, leading one to propose the following hypotheses:

- **Hypothesis 5**: Interaction has a positive and significant effect on PU for e-learning systems.
- **Hypothesis 6**: Interaction has a positive and significant effect on PEOU for e-learning systems.

**Enjoyment**

Enjoyment is the level an individual perceives her usage of technology as enjoyable without taking into account the expected performance results (Lubbe & Low, 1999). In e-learning systems, Enjoyment is closely related to whether the individual deems her usage as exciting, satisfactory and pleasant (Armenteros, 2013). Enjoyment is an example of internal motivation and a significant determinant of user acceptance (Shyu & Huang, 2011). In TAM 3, Enjoyment is proposed as an antecedent of PEOU (Venkatesh & Bala, 2008).

Various research have examined whether the enjoyment of an e-learning system’s user significantly and positively influences her PU. In the 16 publications reviewed within the scope of this study, 13 accepts this hypothesis. Many software developers include enjoyable design features in systems, not only aiming to increase the level of Enjoyment but also bearing the intention to boost the system’s perceived user-friendliness (Venkatesh, 2000). The lack of enjoyment may cause the user to feel that she has to spare more effort to use the system. Likewise, in all the 12 research reviewed, Enjoyment is found
out to significantly and positively affect PEOU. Therefore, the below hypotheses can be suggested:

- Hypothesis 7: Enjoyment has a positive and significant effect on PU for e-learning systems.
- Hypothesis 8: Enjoyment has a positive and significant effect on PEOU for e-learning systems.

**Anxiety**

From a computer-science perspective, anxiety is simply the fear and concern upon facing the probability of using a computer (Venkatesh, 2000), while another definition describes Computer Anxiety as an individual’s inclination to feel concern about using a computer (Howard and Smith, 1986). Interaction with a computer can revive strong and negative feelings in users (Saade and Kira, 2006). Hence, users with a relatively lower level of anxiety have a higher possibility of interaction with systems (Karaali, Gumussoy & Calisir, 2011).

Research reviewed within the scope of this study found out that the relationship between Computer Anxiety and PEOU have been tested and accepted more frequently than the one between Computer Anxiety and PU. (12 of the 19 studies examined found out that Computer Anxiety is a significant determinant of PEOU whereas only 3 of the 8 publications do so for the external variable’s relationship with PU). If an individual gets anxious upon her usage of information technologies, she might perceive the system as complicated and difficult (Raaij & Schepers, 2008). This lemma can also be replicated for e-learning systems. Therefore, the following hypothesis can be put forward:

- Hypothesis 9: Anxiety has a negative and significant effect on PEOU for e-learning systems.

**Compatibility**

Compatibility is the level in which users perceive an innovation to be compatible with their current values, needs and past experiences (Moore & Benbasat, 1991). A higher level of Compatibility generally results in a higher level of system acceptance (Tung & Chang, 2008.a), whereas the Diffusion of Innovation Theory classifies innovations’ characteristics based on their Relative Advantage, Compatibility, Complexity, Trialability and Observability (Rogers, 1983). The Relative Advantage and Complexity paradigms in DIT can be used interchangeably with PU and PEOU in TAM, respectively (Chang & Tung, 2008). Therefore, it has been assessed that many of the studies examined developed a hybrid model via synthesizing DIT and TAM, and theorized Compatibility as a pre-determinant of TAM’s belief structures.

Research reviewed within the scope of this study found out that the relationship between Compatibility and PU have been tested and accepted more frequently than the one between Compatibility and PU. (10 of the 11 studies examined found out that Compatibility is a significant determinant of PU whereas only 3 of the 6 publications do so for the external variable’s relationship with PEOU). A user’s thought that e-learning is harmonious with her own beliefs, needs and experiences can trigger a positive perception of the system’s value added. Hence, the following hypothesis can be tested:

- Hypothesis 10: Compatibility has a positive and significant effect on PU for e-learning systems.
The TAM Variables
Original TAM comprises of PU, PEOU, A, I and U (As shown in Figure 1), where the first two variables represent the belief structures in TRA. Among the many determinants of system usage, PU and PEOU are the most important (Davis, 1989). TAM proposes that PU and PEOU (Venkatesh & Davis, 2000) mediate the impact of many external variables on the intention to use. External variables help understand the impact scale and scope of PU and PEOU and provide guidance in designing action plans to facilitate usage (Legris, Ingham & Collerette, 2003).

It is expected from the variable A to mediate the effect of belief variables on I. Nevertheless, current research show that Attitude does not sufficiently explain the causal relationship between belief and intention (Davis, Bagozzi & Warshaw, 1989), leading to the opinion that the connection between A and I is spurious (Venkatesh, Morris, Davis & Davis, 2003). Eliminating A, therefore, could prove valuable in examining PU and PEOU’s influence on I (Venkatesh, 2000). In line with this view, it has been observed that many studies frequently use PU, PEOU and I of the TAM components and rule out A (As shown in Table 2). Moreover, TAM proposes that PEOU is a direct determinant of PU, influencing I directly and through its effect on PU (As shown in Figure 1). In e-learning systems, user’s opinion on the difficulty of the system can affect her perception on the system’s usefulness. Therefore, the following hypotheses can be tested:

- Hypothesis 11: PEOU has a positive and significant effect on PU for e-learning systems.
- Hypothesis 12: PU has a positive and significant effect on I for e-learning systems.
- Hypothesis 13: PEOU has a positive and significant effect on I for e-learning systems.

Satisfaction
The main objective of a company is to cater for the needs that increase customer satisfaction, rather than just rendering goods and services. Therefore; customer satisfaction is a key factor in gaining competitive advantage (Dominici & Palumbo, 2013). One of the results of customer satisfaction is the re-purchasing of the good and service rendered. Similarities can be found between this activity of re-purchasing and the continuous usage of information technologies (Lee, 2010). User satisfaction is one of the important criteria that measures the success of information systems, where the variable is proposed to be one of the six main dimensions of information systems success in the IS Success Model (DeLone & McLean, 1992).

A considerable amount of research investigating users’ acceptance of e-learning systems incorporated user satisfaction into TAM and tested its inter-relationships with other TAM components, even though original TAM does not take into consideration the effect of user satisfaction on information systems’ acceptance. In all of the 14 publications spanned, PU has been accepted as a significant determinant of Satisfaction, whereas in 7 of the 10 research examined find out a significant connection between PEOU and Satisfaction. Relationship between Satisfaction and I and Satisfaction and U was deemed to be significant in 10 and 2 of the studies investigated, respectively (As shown in Table 3).
Users' belief that e-learning systems may influence performance and apprehension of the system as relatively easy can trigger a positive perception of satisfaction. In addition, user satisfaction may appear as a vital determinant of the intention to use e-learning systems. Therefore, the below hypotheses can be suggested:

- **Hypothesis 14:** PEOU has a positive and significant effect on Satisfaction for e-learning systems.
- **Hypothesis 15:** PU has a positive and significant effect on Satisfaction for e-learning systems.
- **Hypothesis 16:** Satisfaction has a positive and significant effect on I for e-learning systems.

As a result of the meta-analysis conducted, Acceptance and Satisfaction Model for E-Learning (ASME) has been proposed (As shown in Figure 2).
CONCLUSION

The main objective of this study is to identify the factors that influence users’ acceptance of e-learning systems and hence, guide researchers and systems developers in designing the necessary corrective measures. In line with this target, research that investigate user acceptance in e-learning systems via utilising TAM was specified and assessed. Relationships between TAM’s belief structures, PU and PEOU with the external variables proposed in these research were analyzed. Hypotheses that were frequently accepted in the literature were identified and incorporated into the model proposed.

In the meta-analysis conducted, 177 journal papers, 22 conference papers and 4 PhD thesis that examine user acceptance in e-learning systems via TAM are analyzed where 129 different external variables are proposed as antecedents of belief structures. 220 hypotheses that question the relationship of these external variables with PU and PEOU are tested 714 times. As a result of this literature review, the most frequently accepted relationships are ranked as follows: Self Efficacy-PEOU (58), Subjective Norm-PU (27), Self Efficacy-PU (24), Interaction-PU (15), Enjoyment-POEU (13), Anxiety-PEOU (12), Enjoyment-PU (12), Compatibility-PU (10), Subjective Norm-PEOU (9) and Interaction-PEOU (8).

Variables and hypotheses proposed in the model are identified through a three-phased approach. First, relationships between variables recurrently accepted in the literature reviewed and PU/PEOU are analyzed and the most frequently accepted hypotheses are incorporated into the model. In the second step, a thorough assessment is conducted on the utilization of TAM’s components and inferences made regarding these variables. In line with these takeaways, the variables A and U, which make up two of the five components of the original TAM are excluded from the model proposed. Last, the relationship between TAM variables and User Satisfaction, a variable not included in the original TAM is examined. Conforming to the findings of these studies, the position of User Satisfaction in the model proposed is identified. As a result of this three-phased approach Acceptance and Satisfaction Model for E-Learning (ASME) is proposed.

In the literature reviewed, only one publication that conducted a meta-analysis of the studies utilizing TAM within the perspective of users’ e-learning acceptance is attained. Abdullah and Ward (2016) investigated 107 studies and identified the five most recurrently used external variables. This study increases the span of the literature review to 203 and takes into account the most frequently accepted hypotheses, rather than the external variables. Therefore, the model proposed does not include hypotheses that are not accepted, despite having been frequently tested or external variables that are found out to have a significant relationship with only one of the belief structures.
Literature reviewed are also classified based on their respective geographical region and countries, allowing the researchers to investigate the differences of users in different regions. Most of the literature reviewed was conducted in East Asia and Pacific, while relatively less publications within the scope of the study originated from Latin America and the Caribbean, Sub-Saharan Africa and South Asia. It is also observed that the effect of System Functionality (91.7%), Playfulness (81.8%) and Self-Efficacy (85%) on PU and PEOU were the most recurrently accepted hypotheses in East Asia and Pacific, Europe and Central Asia and Middle East and North Africa, respectively. Moreover, Subjective Norm is expected to have a higher acceptance rate in Eastern cultures where users’ social attributes are regarded with increased value. The higher acceptance rates of Subjective Norm in Middle East and North Africa (87.5%) and East Asia and Pacific (85%) compared to Europe and Central Asia (76.9%) validates this view. It should also be emphasized that Self Efficacy has a high acceptance rate in Middle East and North Africa (85%) compared to East Asia and Pacific (67.6%), Europe and Central Asia (52.2%).

Further research should focus upon empirically testing the model on different e-learning systems, allowing researchers to modify the model based on the structure of the e-learning system as well as the region the study is conducted.

LIMITATIONS OF STUDY

The study has some limitations that can be addressed in future studies. Firstly, the model proposed as a result of the literature review, has not been empirically tested. In future works, the proposed model should be empirically tested and results should be discussed. Moreover, in the model proposed in this study, according to the literature the most accepted hypotheses affecting PU and PEOU, proposed by TAM as two main determinants of intention to use, are suggested. However, some hypotheses that have never been tested or rarely tested in the literature may also give effective results. In future studies, researchers should test possible extrinsic variables that they consider possibly effective on e-learning acceptance, by adding those variables to the suggested model in this study. Despite the existing limitations, this study may contribute to the e-learning system developers and researchers working on this field.

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## APPENDICES

### Appendix 1. 203 Publications Aiming to Explain User Acceptance in E-Learning Systems

<table>
<thead>
<tr>
<th>Study</th>
<th>Territory</th>
<th>Participant Information</th>
<th>TAM Components</th>
<th>External Factors</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PU</td>
<td>P</td>
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<td>Abbad, Morris &amp; Nahlik (2009)</td>
<td>Jordan</td>
<td>486 Students</td>
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<td>Abbas (2016)</td>
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<td>+</td>
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<td>Abdel-Wahab (2008)</td>
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<td>+</td>
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<td>242 Students</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Abramson, Dawson &amp; Stevens (2015)</td>
<td>U.S.A</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Adetiimirin (2015)</td>
<td>Nigeria</td>
<td>121 Students</td>
<td>-</td>
<td>-</td>
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<td>Agudo-Peregrina, Hernandez-García, &amp; Pascual-Miguel (2014)</td>
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<td>Al-Adwan, Al-Adwan &amp; Smidley (2013)</td>
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<td>Al-Alak &amp; Alnawas (2011)</td>
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<td>+</td>
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<td>Alenezi, Karim &amp; Veloo (2011)</td>
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<td>Al-Mushasha (2013)</td>
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<td>+</td>
<td>+</td>
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<td>Country</td>
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<td>--------------</td>
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<td>189 Students</td>
<td>Result Demonstrability (+,x), Perception of External Control (x,+), Perceived Enjoyment (x,+)</td>
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<td>Spain: Job Relevance(+,x), Result Demonstrability(+,x), Perception of External Control(x,+), Chile: Job Relevance(+,x), Result Demonstrability(+,x), Perception of External Control(x,+), Previous Experience with Technology (-,-), Perception Enjoyment (+,+), Interactivity (+,+), Perceived System Quality(x,+), Anxiety (x,+)</td>
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<td>Brown, Ingram &amp; Thorp (2006)</td>
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<td>Azerbaijan</td>
<td>714 Students</td>
<td>Subjective Norm (+,-), Experience (+,+), Enjoyment (+,+), Computer Anxiety (+,-), Self Efficacy (+,-), Environment Interaction (+,-)</td>
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<tr>
<td>Chang &amp; Liu (2013)</td>
<td>Taiwan</td>
<td>60 Students</td>
<td>Augmented Reality (+,+), Content Quality (+,+), Environment Interaction (+,-)</td>
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<tr>
<td>Chang &amp; Tung (2008)</td>
<td>Taiwan</td>
<td>212 Students</td>
<td>Compatibility (+,-), Perceived Enjoyment (+,+), System Characteristics (+,+)</td>
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<tr>
<td>Chen, Lin, Yeh &amp; Lou (2013)</td>
<td>Taiwan</td>
<td>218 Students</td>
<td>-</td>
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<tr>
<td>Chen &amp; Tseng (2012)</td>
<td>Taiwan</td>
<td>402 Teachers</td>
<td>-</td>
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<tr>
<td>Cheng (2011)</td>
<td>Taiwan</td>
<td>328 Employees</td>
<td>-</td>
<td></td>
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<tr>
<td>Cheng (2012)</td>
<td>Taiwan</td>
<td>483 Employees</td>
<td>-</td>
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<td>First Name</td>
<td>Last Name</td>
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<tr>
<td>Cheng</td>
<td>(2013)</td>
<td>Taiwan</td>
<td>218</td>
<td>+       +       -       +       -       Learner-System Interaction (+,+), Instructor-Learner Interaction (+,+), Learner-Learner Interaction (+,+)</td>
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<tr>
<td>Cheng</td>
<td>(2014)</td>
<td>Taiwan</td>
<td>225</td>
<td>+       +       -       +       -       Controllibility (+,+), Responsiveness (+,+), Two Way Communication (+,+), Personalization (+,+), Navigation (+,+)</td>
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<tr>
<td>Cheng</td>
<td>(2015)</td>
<td>Taiwan</td>
<td>486</td>
<td>+       +       -       +       -       Convenience (+,+)</td>
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<td>Cheung</td>
<td>Vogel (2013)</td>
<td>Hong Kong</td>
<td>136</td>
<td>+       +       +       +       -       Perceived Resource (x,+), Compatibility (x,+), Sharing (+,x)</td>
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<tr>
<td>Cho, Cheng &amp; Hung (2009)</td>
<td>Hong Kong</td>
<td>445</td>
<td>+       -       -       +       -       -</td>
<td></td>
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<tr>
<td>Chow, Herold, Choo &amp; Chan (2012)</td>
<td>Hong Kong</td>
<td>206</td>
<td>+       +       -       +       -       Computer Self Efficacy (+,+), User Experience (x,+), Subjective Norm (+,+), Computer Self Efficacy (+,+), Flow/Playfulness (x,+), Cognitive Presence (+,+), Training (+,+)</td>
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<td>Chow, Chan, Lo, Chu, Chan &amp; Lai (2013)</td>
<td>Hong Kong</td>
<td>128</td>
<td>+       +       +       +       -</td>
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<tr>
<td>Cigdem &amp; Topcu (2015)</td>
<td>Turkey</td>
<td>115</td>
<td>+       +       -       +       -       Subjective Norm (+,+), Technological Complexity (x,+), Application Self Efficacy (+,+), Subjective Norm (+,+), Technological Complexity (x,+), Computer Self Efficacy (+,+), Perceived Usefulness for Professors (+,x), Perceived Compatibility with Student Tasks (+,+), Training (+,+)</td>
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<tr>
<td>Coskuncay &amp; Ozkan (2013)</td>
<td>Turkey</td>
<td>224</td>
<td>+       +       -       +       -       Application Self Efficacy (+,+), Subjective Norm (+,+), Technological Complexity (x,+), Computer Self Efficacy (+,+), Perceived Usefulness for Professors (+,x), Perceived Compatibility with Student Tasks (+,+), Training (+,+)</td>
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<td>Davis &amp; Wong (2007)</td>
<td>New Zealand</td>
<td>964</td>
<td>+       +       -       +       -       Subjective Norm (+,x), Output Quality (+,x)</td>
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<tr>
<td>De Smet, Bourgonjon, Wever, Schelens &amp; Valcke (2012)</td>
<td>Belgium</td>
<td>505 Teachers</td>
<td>+       +       -       -       +       Personal Innovativeness toward IT (+,+), Experience (x,+), Subjective Norm (+,+), Computer Friendliness Experience + Knowledge (x,-)</td>
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<tr>
<td>Deshpande, Bhattacharya &amp; Yammilyavar (2012)</td>
<td>India</td>
<td>40 Students</td>
<td>+       +       +       +       +       Computer Friendliness Experience + Knowledge (x,-)</td>
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<tr>
<td>Escobar-Rodriguez &amp; Monge-Lozano (2012)</td>
<td>Spain</td>
<td>162 Students</td>
<td>+       +       -       +       -       Perceived Usefulness for Professors (+,x), Perceived Compatibility with Student Tasks (+,+), Training (+,+)</td>
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<tr>
<td>Fadare, Babatunde, Akomolafe &amp; Lawal (2011)</td>
<td>Nigeria</td>
<td>458 Students</td>
<td>+       +       +       +       -</td>
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<tr>
<td>Fagan, Kilmon &amp; Pheey (2012)</td>
<td>U.S.A</td>
<td>158 Students</td>
<td>+       +       -       +       -       Personal Innovativeness in the Domain of IT (+,+), Computer Self Efficacy (+,+), User Experience (x,+), Subjective Norm (+,+), Computer Self Efficacy (+,+), Perceived Usefulness for Professors (+,x), Perceived Compatibility with Student Tasks (+,+), Training (+,+)</td>
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<tr>
<td>Floental (2016)</td>
<td>U.S.A</td>
<td>156 Students</td>
<td>-       +       -       -       -</td>
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<tr>
<td>Freitas, Ferreira, Garcia &amp; Kurtz (2017)</td>
<td>Brazil</td>
<td>260 Students</td>
<td>+       +       +       +       -       Interactivity (+,x), Technical Support Availability (x,+), User Experience (x,+), Subjective Norm (+,+)</td>
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<tr>
<td>Harmion (2015)</td>
<td>U.S.A</td>
<td>195 Students</td>
<td>+       +       -       +       -       Personal Innovativeness (+,-)</td>
<td></td>
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<tr>
<td>Hashim (2008)</td>
<td>Malaysia</td>
<td>261 Employees</td>
<td>+       +       -       -       -</td>
<td></td>
</tr>
<tr>
<td>Hei &amp; Hu (2011)</td>
<td>China</td>
<td>253 Students</td>
<td>+       +       +       +       -       Social Influences (-,x)</td>
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<tr>
<td>Hidayanto, Febrilawan, Sucahyo &amp; Purwakari (2014)</td>
<td>Indonesia</td>
<td>74 Students</td>
<td>+       +       +       +       +       Task Technology Fit (+,+)</td>
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</tr>
<tr>
<td>Ho, Ke, Liu (2015)</td>
<td>Hong Kong</td>
<td>131 Students</td>
<td>+       +       +       +       -       Locus of Control (+,+), Computer Self Efficacy (x,+), Computer Self Efficacy (+,+)</td>
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<tr>
<td>Hsia, Chang &amp; Tseng (2014)</td>
<td>China</td>
<td>223 Employees</td>
<td>+       +       -       +       -       Locus of Control (+,+), Computer Self Efficacy (x,+), Computer Self Efficacy (+,+)</td>
<td></td>
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<tr>
<td>Hsia &amp; Tseng (2008)</td>
<td>Taiwan</td>
<td>233 Employees</td>
<td>+       +       -       -       -       Computer Self Efficacy (+,+)</td>
<td></td>
</tr>
<tr>
<td>Hsiao &amp; Chen (2015)</td>
<td>Taiwan</td>
<td>60 Students</td>
<td>+       +       -       +       -       Mobile Learning Self Efficacy (+,+), Task Technology Fit (+,+)</td>
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<tr>
<td>Hsu &amp; Chang (2013)</td>
<td>Taiwan</td>
<td>82 Students</td>
<td>+       +       +       +       -       Perceived Convenience (+,x)</td>
<td></td>
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<tr>
<td>Huang, Lin &amp; Chang (2007)</td>
<td>Taiwan</td>
<td>313 Students</td>
<td>+       +       +       +       -       Perceived Mobility Value (+,x), Perceived Enjoyment (x,+), Computer Self Efficacy (+,-), Convenience (x,-), Instructional Design (+,+), Technological Factor (-,+)</td>
<td></td>
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<tr>
<td>Hussein, Aditl jawarman &amp; Mohamed (2007)</td>
<td>Indonesia</td>
<td>147 ogrenci</td>
<td>+       +       -       +       -       Instructor Characteristics (-,x), Computer Self Efficacy (+,-)</td>
<td></td>
</tr>
<tr>
<td>Hussein (2017)</td>
<td>Malaysia</td>
<td>151 Students</td>
<td>+       +       +       +       -</td>
<td></td>
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<tr>
<td>Ibrahim, Leng, Yusoff, Samy (2014)</td>
<td>Malaysia</td>
<td>95 Students</td>
<td>+       +       +       +       -       Instructor Characteristics (-,x), Computer Self Efficacy (+,-)</td>
<td></td>
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<tr>
<td>Authors</td>
<td>Country</td>
<td>Sample Size</td>
<td>Perceived Interactivity (+,+)</td>
<td>Perceived Enjoyment (+,x), System Characteristics (+,+), System Interactivity (+,+)</td>
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<tr>
<td>Masrom &amp; Rizman (2017)</td>
<td>Malaysia</td>
<td>326 Students</td>
<td>1107 Students</td>
<td>Content Quality (+,+), Organisational Impact (+,+), Task Environment (+,x), Task Performance (+,+), Perceived Enjoyment (+,x), System Characteristics (+,+)</td>
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<tr>
<td>Lee, Hsieh &amp; Ma (2015)</td>
<td>Taiwan</td>
<td>215 Students</td>
<td>552 Employees</td>
<td>Task Technology Fit (+,x), Computer Anxiety (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x)</td>
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<tr>
<td>Letchumanan &amp; Tarmizi (2011)</td>
<td>Malaysia</td>
<td>169 Students</td>
<td>326 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Li, Duan &amp; Alfred (2012)</td>
<td>China</td>
<td>280 Students</td>
<td>432 Respondents</td>
<td>undersstanding U-learning (+,x), Applying U-learning (+,x), Perceived Interactivity (+,x), System Functionality (+,x), System Response (+,x)</td>
</tr>
<tr>
<td>Lin, Chen &amp; Yeh (2010)</td>
<td>Taiwan</td>
<td>214 Students</td>
<td>404 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Lin (2013)</td>
<td>Taiwan</td>
<td>212 Students</td>
<td>38 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Lin, Persada &amp; Nadifatih (2014)</td>
<td>Taiwan</td>
<td>302 Students</td>
<td>88 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Litchfield (2015)</td>
<td>U.S.A</td>
<td>318 Nurses</td>
<td>78 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Liu, Liao &amp; Peng (2005)</td>
<td>Taiwan</td>
<td>88 Students</td>
<td>215 Students</td>
<td>Gender (+,x), System Functionality (+,x), System Response (+,x), System Interactivity (+,x), System Characteristics (+,x)</td>
</tr>
<tr>
<td>Name(s)</td>
<td>Country</td>
<td>Sample Size</td>
<td>Gender Distribution</td>
<td>Variables Study</td>
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<tr>
<td>Liu, Liao &amp; Pratt (2009)</td>
<td>Taiwan</td>
<td>88 Students</td>
<td>+ + + + -</td>
<td>E-learning Materials Presentation Types (+,+)</td>
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<td>Liu, Li &amp; Carlsson (2010)</td>
<td>China</td>
<td>209 Students</td>
<td>+ + - - -</td>
<td>Personal Innovativeness (+,+),</td>
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<td>Lo, Hong, Lin &amp; Hsu (2012)</td>
<td>China</td>
<td>45 Students</td>
<td>+ + + - -</td>
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<tr>
<td>Lo, Liu &amp; Wang (2014)</td>
<td>Taiwan</td>
<td>35 Students</td>
<td>+ - + + -</td>
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<tr>
<td>Loukis, Pazzalos &amp; Salagara (2012)</td>
<td>Greece</td>
<td>98 Professionals</td>
<td>+ + + - -</td>
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<td>Lowe, D'Alessandro, Winzar, Laffey &amp; Collier (2013)</td>
<td>UK</td>
<td>144 Students</td>
<td>+ + + + -</td>
<td>Affinity (+,+), Risk Tolerance (+,+),</td>
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<td>Ma, Chao &amp; Cheng (2013)</td>
<td>Taiwan</td>
<td>650 Nurses</td>
<td>+ + - + +</td>
<td>Task Technology Fit (+,+), Computer Self Efficacy (-,+)</td>
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<tr>
<td>Mafunda, Swart &amp; Bere (2016)</td>
<td>South Africa</td>
<td>49 Students</td>
<td>+ + + - +</td>
<td>Competition Pressure (+,-), Government Support (+,+),</td>
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<tr>
<td>Macharia &amp; Nyakwende (2009)</td>
<td>Kenya</td>
<td>200 Students</td>
<td>+ + - + +</td>
<td>Perceived Socio Economic (+,+),</td>
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<td>Martin (2012)</td>
<td>Oman</td>
<td>210 Students</td>
<td>+ + - + +</td>
<td>Subjective Norm (+,+), Extrinsic Motivation (-,-),</td>
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<td>Martinez-Torres, Marin, Garcia, Vazquez, Oliva &amp; Torres (2008)</td>
<td>Spain</td>
<td>220 Students</td>
<td>+ + - + +</td>
<td>Methodology, Accessibility (+,+),</td>
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<tr>
<td>Moghadam &amp; Barmazadeh (2009)</td>
<td>Iran</td>
<td>155 Students</td>
<td>+ + - + -</td>
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<tr>
<td>Mohammed &amp; Karim (2012)</td>
<td>Malaysia</td>
<td>160 Students</td>
<td>+ + - + -</td>
<td>Computer Application Anxiety (-,-), Self Efficacy (-,-)</td>
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<tr>
<td>Mohammadi (2015.a)</td>
<td>Iran</td>
<td>390 Students</td>
<td>+ + - + +</td>
<td></td>
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<tr>
<td>Mohammadi (2015.b)</td>
<td>Iran</td>
<td>390 Students</td>
<td>+ + - + +</td>
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<tr>
<td>Moreno, Cavazotte &amp; Alves (2016)</td>
<td>Brazil</td>
<td>251 Students</td>
<td>+ + - + +</td>
<td>System Interactivity (+,+), Social Influence (-,-),</td>
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<td>Motaghiyan, Hassanzadeh &amp; Moghadam (2013)</td>
<td>Iran</td>
<td>115 Instructors</td>
<td>+ + - + +</td>
<td>Output Quality (-,-), Cognitive Absorption (+,+),</td>
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<td>Nan, Xun-hua &amp; Guo-qing (2007)</td>
<td>China</td>
<td>121 Students</td>
<td>+ + + + +</td>
<td>Self Efficacy (+,+), Facilitating Conditions (+,+), Prior Experience (+,-),</td>
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<td>Ngai, Poon &amp; Chan (2007)</td>
<td>Hong Kong</td>
<td>836 Students</td>
<td>+ + + + -</td>
<td>System Interactivity (+,+), Service Quality (-,+), Subjective Norm (+,+), Self Efficacy (+,-),</td>
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<td>Okazaki &amp; Santos (2012)</td>
<td>Brazil</td>
<td>446 Faculty Members</td>
<td>+ + + + +</td>
<td>Information Quality (+,+), System Quality (-,-),</td>
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<td>Ong, Lai &amp; Wang (2004)</td>
<td>Taiwan</td>
<td>140 Engineers</td>
<td>+ - + + -</td>
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<td>Ong &amp; Lai (2006)</td>
<td>Taiwan</td>
<td>156 Employees</td>
<td>+ + - - +</td>
<td>Computer Self-Efficacy (+,-), Computer Self-Efficacy (+,+),</td>
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<td>Ouyang, Tang, Rong, Zhang, Yin &amp; Xiong (2017)</td>
<td>China</td>
<td>234 Students</td>
<td>+ - - - +</td>
<td>Confirmation (+,+),</td>
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<td>Padilla-Melendez, Aguilera-Obra &amp; Garrido-Moreno (2013)</td>
<td>Spain</td>
<td>484 Students</td>
<td>+ + + + +</td>
<td>Males: Perceived Playfulness (+,+), Females: Perceived Playfulness (+,+),</td>
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<tr>
<td>Park (2009)</td>
<td>South Korea</td>
<td>628 Students</td>
<td>+ + + + +</td>
<td>E-learning Self Efficacy (+,+), Subjective Norm (+,-), System Accessibility (+,+),</td>
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<td>Country</td>
<td>Sample Size</td>
<td>Variables</td>
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<td>Park, Nam &amp; Cha (2012)</td>
<td>South Korea</td>
<td>288 Students</td>
<td>Pleasure seeking (+,+), Applicability (+,+), Mobil Learning Self Efficacy (+,-), Major Relevance (+,-), System Accessibility (+,+), Subjective Norm (+,-)</td>
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<tr>
<td>Park, Son &amp; Kim (2012)</td>
<td>South Korea</td>
<td>408 Professionals</td>
<td>Enjoyment (+,-), Computer Anxiety (+,+), Social Influence (+,x), Organizational Support (+,+), Information Quality (+,x), System Quality (+,-)</td>
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<tr>
<td>Perreira, Ramos &amp; Chagas (2015)</td>
<td>Brazil</td>
<td>192 Students</td>
<td>System Functionality (+,+), System Interactivity (+,-), System Response (+,+), Self-Efficacy (+,-), Internet Experience (+,-)</td>
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<tr>
<td>Piltuch &amp; Lee (2006)</td>
<td>Taiwan</td>
<td>259 Students</td>
<td>Personal innovativeness in the domain of information technology (+,-), Computer Anxiety (+,x), Social Norms (+,x)</td>
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<tr>
<td>Poelmans, Wessa, Milis, Bloemen &amp; Doom (2008)</td>
<td>Belgium</td>
<td>200 Students</td>
<td>Information Quality (+,x), System Quality (x,+), Subjective Social Norm (+,x), Perceived Compatibility (+,+), Perceived Enjoyment (+,x), Perception of External Control (x,+), User Experience (+,x), Previous Experience (+,-)</td>
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<tr>
<td>Post (2010)</td>
<td>U.S.A</td>
<td>134 Students</td>
<td>Subjective Norms (+,x), Image (+,x), Internet Experience (+,-), Computer Anxiety (+,x), Age (-,x), Computer Self Efficacy (+,-), Affect (-,x)</td>
<td></td>
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<tr>
<td>Premchaiswadi, Porouhan &amp; Premchaiswadi (2012)</td>
<td>Thailand</td>
<td>86 Students</td>
<td>Subjective Norms (+,x), Image (+,x), Internet Experience (+,-), Computer Anxiety (+,x), Age (-,x), Computer Self Efficacy (+,-), Affect (-,x)</td>
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</tr>
<tr>
<td>Purnomo &amp; Lee (2012)</td>
<td>Indonesia</td>
<td>360 Employees</td>
<td>Management Support (+,+), Computer Self Efficacy (-,-), Prior Experience (+,+), Competency (+,+), Performance (+,-), Personal Innovativeness (+,x), System Quality (+,-), Internet Self Efficacy (+,-), Social Norms (+,x)</td>
<td></td>
</tr>
<tr>
<td>Raaij &amp; Schepers (2008)</td>
<td>China</td>
<td>40 Managers</td>
<td>Subjective Social Norm (+,x), Perceived Compatibility (+,+), Perceived Enjoyment (+,x), Perception of External Control (x,+), User Experience (+,x), Previous Experience (+,-)</td>
<td></td>
</tr>
<tr>
<td>Ramayah &amp; Lee (2012)</td>
<td>Malaysia</td>
<td>250 Students</td>
<td>Subjective Norms (+,x), Image (+,x), Internet Experience (+,-), Computer Anxiety (+,x), Age (-,x), Computer Self Efficacy (+,-), Affect (-,x)</td>
<td></td>
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<tr>
<td>Ramirez-Correa Arenas-Gaitán &amp; Rondan Cataluña (2015)</td>
<td>Chile &amp; Spain</td>
<td>389 Students</td>
<td>Result Demonstrability (+,x), Perceived Enjoyment (+,x), Perception of External Control (x,+), User Experience (+,x), Previous Experience (+,-)</td>
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<tr>
<td>Rejón-Guardia, Sanchez-Fernandez &amp; Muñoz-Leiva (2013)</td>
<td>Spain</td>
<td>135 Students</td>
<td>Subjective Norms (+,x), Image (+,x), Internet Experience (+,-), Computer Anxiety (+,x), Age (-,x), Computer Self Efficacy (+,-), Affect (-,x)</td>
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</tr>
<tr>
<td>Rezaei, Mohammadi, Asadi &amp; Kalantary (2008)</td>
<td>Iran</td>
<td>120 Students</td>
<td>Subjective Norms (+,x), Image (+,x), Internet Experience (+,-), Computer Anxiety (+,x), Age (-,x), Computer Self Efficacy (+,-), Affect (-,x)</td>
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</tr>
<tr>
<td>Roca, Chiu &amp; Martinez (2006)</td>
<td>Spain</td>
<td>172 Workers</td>
<td>Confirmation (+,x), Computer Self Efficacy (+,x), Internet Self Efficacy (+,x)</td>
<td></td>
</tr>
<tr>
<td>Roca &amp; Gagne (2008)</td>
<td>Spain</td>
<td>166 Workers</td>
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**Note:** Expressions in parentheses indicate the tested relationship between the external variable & the belief variable. Value (+) in parantheses indicates that the relationship is found to be significant, value (-) in parantheses indicates that the relationship is found to be insignificant, value (x) in parantheses indicates that the relation is not tested.

**Appendix 2. 129 Variables Proposed as Determinants of PU & PEOU in E-Learning Systems & 220 Hypotheses Tested in the Literature Reviewed**
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55 External Computing Support PU 1 1 Lee (2008)

56 External Computing Support PEOU 1 1 Lee (2008)


58 External Equipment Accessibility PU 1 0 Lee (2008)

59 External Equipment Accessibility PEOU 1 1 Lee (2008)

60 External Influence PU 3 2 Abbas, Egypt & UK (2016), Cheng (2011)

61 Extraversion PEOU 1 1 Tran (2016)


64 Flexibility PU 1 1 Hsia & Tseng (2008)

65 Flow PU 1 1 Sanchez-Franco (2010)

66 Flow PEOU 2 2 Davis & Wong (2007), Sanchez-Franco (2010)

67 Gadget Design PU 1 1 Ros, Hernandez, Caminero, Robles, Barbero, Macia & Holgado (2014)

68 Gadget Design PEOU 1 0 Ros, Hernandez, Caminero, Robles, Barbero, Macia & Holgado (2014)

69 Gender PU 1 0 Letchuman & Tarmizi (2011)

70 Gender PEOU 1 0 Letchuman & Tarmizi (2011)

71 Gender Diversity PU 1 0 Al-Azawel & Lundqvist (2015)

72 Gender Diversity PEOU 1 0 Al-Azawel & Lundqvist (2015)

73 Government Support PU 1 1 Macharia & Nyakwende (2009)

74 Government Support PEOU 1 1 Macharia & Nyakwende (2009)

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Macharia & Nyakwende (2009)

Macharia & Nyakwende (2009)

Lee & Lehto (2013)
CORPORATE DISTANCE EDUCATION: AN APPLIED UNDERSTANDING OF ITS RESISTANCE FACTORS

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ABSTRACT

The objective of this study was to identify and analyze the main factors that explain the resistance to distance education (DE) in corporate education (CE) in a military institution. The present study was structured with quantitative and explanatory approach, based on the theoretical framework of the READEC model, which was developed and validated by Albertin and Brauer (2012). From a technical point of view, a bibliographic survey and a field survey were carried out by means of an electronic questionnaire. Data collection was carried out with a sample of 345 Brazilian Army personnel who were part of the Training Course for Sergeants (TCS). The data of this research were treated with the Structural Equation Modeling (SEM), technique based on Partial Least Squares (PLS). The results of the research showed that the self-efficacy and performance expectation dimensions directly and positively influence the resistance to the DE in the CE, and the effort expectation, facilitating conditions and interactivity dimensions are constructs antecedent to the performance expectation. Contrary to the previous theory, the results also indicated that the perception about the organizational infrastructure was not significant to explain the resistance to DE, which allows us to bring new insights about this phenomenon.

Keywords: Distance Education, corporate education, Utart, Readec, e-learning.

INTRODUCTION

Learning can be transmitted in the following forms of education: face-to-face and distance learning. The face-to-face modality is commonly used in traditional courses, where teachers and students are always in one physical place - called a classroom - and these meetings occur at the same time. In distance learning, teachers and students are physically separated in space and/or time. This type of education is carried out through the intense...
use of information and communication technologies. This modality may or may not present face-to-face moments, and its use has grown exponentially in the past decades (Moran, 2002; 2013; Rashid & Rashid, 2012; Rashi & Elahi, 2012).

In this context, distance education (DE) is analyzed as a viable possibility in the construction of mechanisms that foster lifelong learning and qualification throughout life it is fully usable in the corporate environment, since it permits the design of educational events focusing on specific situations, as well as expanding and democratizing access to training opportunities (Abbad, Zerbini & Souza, 2010: 2; Zerbini et al., 2013). This modality has been widely adopted in education, in qualifications, and professional training programs and in corporate education (CE).

Despite the increasing use and importance of DE, whether in a traditional or CE context, there has been resistance to its use. As an example, this opposition can occur due to: the perceived utility of the tool on the part of collaborating users (Brauer, 2008), the difficulty of understanding the technology and the lack of contact with other students (Vianney et al., 2003; Lanzer, 2007; Litto & Formiga, 2009; Rashid & Rashid, 2012; Berge, 2013), and the lack of feedback from tutors and inflexibility regarding the content of the courses (Berge, 2013; Dutra, 2014). It is argued that if a user (such as a collaborator, for example) has one of these resistances in relation to DE, distance learning tends to fall short of expectations and consequently, training results will be lower.

Based on these losses due to resistance of the learning process via DE, and the absence of established theoretical models that explain this process, we start in this article with the following research question: What are the main factors that explain resistance to Corporate Distance Education? To answer this question, we adopted, as a base, the READEC model developed by Albertin and Brauer (2012) by applying a structured questionnaire answered of 230 military personnel who conducted distance corporate courses in the Brazilian Army. This is an institution chosen for recently making massive investments in DE, always with the purpose of training the military professional in the era of knowledge (Peri, 2013). One of the assumptions in this article is that if resistance occurs in an institution that preaches the importance of the DE, this scenario may worsen in other institutions and, for this reason, the Brazilian Army presents itself as an important and pertinent unit of analysis.

This article presents two central contributions. The first contribution (theoretical) is made by evaluating the model proposed by Albertin and Brauer (2012) as well as having an important discussion about which hypotheses in this theoretical model can be accepted and which should be rejected. This study also takes into account the context in which the hypotheses were tested. The second contribution of this article is intended for administrators of DE, both in the public and private spheres. Since they are in possession of the elements that impact resistance the most, DE administrators can make decisions on the ground in order to increase the acceptance of this type of teaching and, consequently, improve their program's results.

THEORY AND HYPOTHESES

Our theoretical reference is organized into three topics. The first two deal with concepts related to distance education and corporate distance education, and topic number three deals with the READEC Model, as well as the presentation of its hypotheses, which are adopted in our article.

Distance Education

As a result of globalization, changes and technological progress have become more common and faster among humans. It is interesting to note the impact of this development in the educational sector as it forms part of a series of knowledge and information frameworks of humans and society. As a result of this development, a modality of education, called Distance Education (DE), is being adopted in the world and applied in education, vocational training programs, and corporate education. DE, therefore, has
emerged as one of the most important tools for transmitting knowledge and democratizing information.

According to Moore and Kearsley (2013), one of the earliest instances of distance education occurred in the early 1880s. For the first time, people who wished to study from their work or home environment could do so through the postal services. As an integral part of the social system, traditional education methods have inevitably been affected by the increasing ubiquity of this alternative for education. DE has grown rapidly with the advent of cyberspace as a direct or indirect educational tool. Emerging in this context, DE has characterized itself as an education-learning process in which internet technology acts as mediator of the teacher-student relationship (Moran, 1994).

What can be concluded is that DE, leveraged by technologies, has grown noticeably and gained the attention of educational planners in recent years. Such a situation may be justified by its benefits, some of which have been mentioned by Moore and Kearsley (2010), such as: access to learning opportunities, improving human skills, reduction of educational costs, targeting of education campaigns for specific audiences, reconciliation of professional life with familiarity, and ease of inclusion of an international dimension to the educational experience.

The literature points to additional advantages of DE. The "school" can be on any computer available with internet access, whether at home, in a company, or even in a Lan house. That is, the most salient advantage is centered around the student's availability to carry out the respective activities according to his or her time (Litto & Formiga, 2009; Rashi & Elahi, 2012). Costas (2006) cites the flexibility of schedules, the pace of learning and the development of self-study, and self-learning abilities as perceived advantages in DE. Diniz (2007: 27) agrees that "another differential is the possibility for the individualization of teaching, according to the rhythm of study and preferences of each student". With concern to advantages, Peter (2003) affirms that distance learning presupposes new behaviors of the students, among them is the ability to think and act independently, to make right choices among several study plans of a course, to reflect on their own learning, and to control their own learning activities. Such behaviors would be decisive for the effectiveness of DE situations as they are characterized by low dialogue and substantial transactional distance (Moore & Kearsley, 2013).

Distance education also has drawbacks, and several of these are identified in the literature. These disadvantages range from problems with the technology used to the lack of interpersonal relationships with other students (Vianney et al., 2003; Abbad, 2007; Lanzer, 2007; Litto & Formiga, 2009; Berge, 2013). For Dutra (2014) it would be interesting if people were also aware of the difficulties that could occur in this type of teaching process, such as: (i) the feeling of isolation, due to being in direct contact with a "machine" and not with people; (ii) a lack of self-motivation to take the course; (iii) a lack of self-discipline to prioritize the course, in the midst of numerous competing daily activities; (iv) feedback from tutors, which can be received later than expected by the student and delayed in relation to the students' needs; (v) the content, which may be inflexible.

Many of these disadvantages, problems, and limitations are caused by high levels of resistance to the use of DE and consequently student avoidance. In this context, Zwicker and Reinhard (1993) affirm that independent of the form used, the didactic use of a computer will only be effective to the extent that the student can be actively involved in the teaching process. This means that the simple use of technology in education or teaching does not improve learning without this involvement of the student. As a consequence, the structuring of a specialized team, composed of people who understand technology and pedagogy, and work in a cohesive way, can generate a better learning performance for the student. This specialized team can also minimize the risks of student avoidance - a troubling problem in the area (Meirelles & Maia, 2009).
Corporate Distance Education

The increase of organizational knowledge has been considered an indicator of organizational learning and is based on the acquisition of employee expertise and on the change and institutionalization of procedures in an organization (Antonello & Godoy, 2010). In this context, corporate education has been applied as a business strategy since it is capable of promoting competitive advantages. It contributes to the goal of transforming business opportunities through knowledge developed and continuously shared between people who are part of, or who are in contact with the organizations.

Ferreira, Valerio and Souza (2010) observe that DE has been diffused through the e-learning modality as a tool for the development of corporate education. This diffusion has been motivated by the considerable spread of information technology and in combination with the improvement of telecommunication infrastructure. Another relevant point for the dissemination of e-learning lies in the fact that organizations and trainees have learning needs that can be met by this modality.

E-learning as a tool in CE has many advantages compared to traditional face-to-face training. Among them is the speed in disseminating knowledge and information, as well as the ease of reaching a larger number of participants. Another point to emphasize is the ease and agility in reproducing and updating the class content (Ferreira, Valerio & Souza, 2010). Despite its advantages, before being invited to participate in distance learning courses, people need to know the advantages of the new technology and how it can complement or replace traditional forms of learning. Without prior preparation of employees for the implementation of distance learning courses, certain prejudices and resistance may surface (Dutra, 2010).

Regarding this last point, Albertin and Brauer (2012) argue that the full use of DE tools in corporate education can generate resistance on the part of employees since many are not familiar with this model of education or do not dominate the technological tools. Creating habits and generating familiarity with the technologies becomes crucial for the success of this process. In view of these challenges, the authors proposed the READEC model.

The Readec Model

Numerous models seek to explain the adoption of individualized technology. It is a subject that has been studied for more than two decades. Venkatesh et al. (2003) have created a unified model in which they integrate the elements of other eight models that work with the acceptance of the technology, according to Table 1:

<table>
<thead>
<tr>
<th>Theory</th>
<th>Definition</th>
<th>Authors/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRA</td>
<td>Theory of Reasoned Action</td>
<td>Fischbein &amp; Ajzen (1975)</td>
</tr>
<tr>
<td>TAM, TAM2</td>
<td>Technology Acceptance Model</td>
<td>Davis (1989)</td>
</tr>
<tr>
<td>MM</td>
<td>Motivational Model</td>
<td>Davis et al. (1992)</td>
</tr>
<tr>
<td>TPB</td>
<td>Theory of Planned Behavior</td>
<td>Ajzen (1991)</td>
</tr>
<tr>
<td>C-TAM-TPB</td>
<td>Combined TAM and TPB</td>
<td>Taylor &amp; Todd (1995)</td>
</tr>
<tr>
<td>MPCU</td>
<td>Model of PC Utilization</td>
<td>Thompson et al. (1991)</td>
</tr>
</tbody>
</table>

Source: Albertin and Brauer (2012).

From empirical and conceptual similarities between these eight models, Venkatesh et al. (2003) selected the constructs that presented greater power in explaining the acceptance of technology (expectation of performance, expectation of effort, social influence and
facilitating conditions), as well as the most influential moderators (gender, age, experience, and conditions). Thus, the UTAUT model was formulated, according to Figure 1:

![Figure 1. The UTAUT Model Source: Venkatesh et al. (2003).](attachment:image.png)

Rivard and Lapointe (2005) won the award for best article in MIS Quarterly magazine, with the qualitative article "Multilevel Model of Resistance to the Implementation of Information Technology". The authors argued that individuals and groups may have various intentions and reactions in relation to the perception of changes in technology. Of the diverse studies in main databases, no other quantitative research was found that had a robust theoretical foundation that used a model of resistance for information systems, with the exception of the research developed, validated and tested by Albertin and Brauer (2012), proponents of the READEC (resistance to DE in corporate education) model.

This model is based on the UTAUT model, and maintains that there are five dimensions that imply the acceptance or resistance to DE in the CE, i.e. Performance Expectation, Expectation of Effort, Facilitating Conditions, Self-Efficacy and Interactivity, which are partially related to the latent variable Resistance to DE in CE, according to the following definitions:

- The Performance Expectancy dimension reflects the degree to which an individual believes that using the system can help him or her achieve performance gains in his or her work;
- The Expectation of Effort dimension reflects the system's degree of ease to use;
- The Facilitating Conditions dimension is defined by the degree to which an individual trust that there is an appropriate organizational and technical infrastructure to support the use of the system;
- The Self-efficacy dimension reflects the judgment of individuals and their ability to organize and execute courses of action required to achieve some designated types of performance;
- The Interactivity dimension is the degree of interaction between the student and the tutor or between the other students in the group. This involves aspects such as monitoring, stimulus and feedback.

Based on the five dimensions, a theoretical structure of resistance to DE in CE (Model READEC) was constructed, according to Figure 2:
Albertin and Brauer (2012) emphasize that there are two dimensions related to the environment in which the individual is placed (Facilitating Conditions and Interactivity). The authors also highlight three other dimensions that are related to the individual itself, i.e., they are characteristics or expectations of their own (Self-efficacy, Expectations of Effort and Performance). The authors conclude that with the identification of these five dimensions, it is possible to explain the process of resistance to DE in the CE by the following hypotheses in testing:

- H1: The Self-efficacy construct has a positive influence on the resistance construct to DE in CE.
- H2: The Performance Expectation construct has a positive influence on the Resistance construct to DE in CE.
- H3: The Expectation of Effort construct has a positive influence on the Performance Expectation construct.
- H4: The Facilitating conditions have a positive influence on the Performance Expectation construct.
- H5: The Interactivity construct has a positive influence on the Performance Expectation construct.

These five hypotheses will be tested in our study, using the method that will be described in the next section.

METHOD

For the development of this article, we adopted an explanatory approach, with the concern we had regarding the registration of facts, analysis, interpretation and, especially, the identification of causes, following the precepts proposed by Lakatos and Marconi (2011) and Gil (2014). In addition, the study can be considered deductive, since generalizations were made to reach the conclusions. A theoretical-empirical approach, through a bibliographical survey and field research, was carried out in the place where the phenomenon occurred. It has elements to explain it, therefore, it follows the precepts of Vergara (2013).
Participants and Data Collection
This article has quantitative characteristics. It has an approach chosen to be adequate for our initial intention to interact with as many individuals as possible. This was done in order to obtain an overview of respondents’ behavior in the context of the public sector - specifically in the army - about the reasons for resistance to DE. It is important to emphasize that the choice of quantitative research was because, in this first stage, the intention is to use as many people as possible, so that we can get a general picture of the behavior of the respondents in the context of the public sector (Army) about the reasons resistance to DE. We believe that this quantitative strategy will also enable the prediction and generalization of the data to other contexts on this topic. Additionally, we emphasize that the statistical analysis and the tests of the data obtained in this research were done through software WarpPls, version 5.0.

 Soldiers in Brazilian Army who were participating or completed one or more corporate distance courses are the population in this study. Located at the School of Sergeants of Arms (EASA) in the city of Cruz Alta - RS, the CAS aims to update the common professional knowledge specific to the Military Qualification of Lieutenants (CAS-2016) and Sergeants (QMS) and permits promotions for sergeants within their military career. All 345 military personnel who were taking the course received an electronic questionnaire, and 230 responded.

It should be noted that the Brazilian Army was chosen to be part of this research because of its recent investments in education and the increasing use of DE. Through the Department of Education and Culture of the Army (DECEX), the Brazilian Army has, as one of its missions to research, to educate and train human resources. It believes that DE is an effective way to constantly invest in the improvement of its professionals and society. With the concept of "education without distance", DECEX created the Coordination of Distance Education (CEAD) in 2005 with the objective of developing and implementing actions of DE in the Brazilian Army. This would allow the soldier, even if transferred to any part of Brazil or abroad, to continue their studies in search of better professional qualifications.

The data about the soldiers was collected in August 2016, through an electronic questionnaire elaborated in Google Forms. This questionnaire is based on six different constructs proposed in the READEC Model of Albertin and Brauer (2012) and had 31 questions structured with the 7-point Likert scale. The response options ranged from "strongly disagree" to "strongly agree". In addition, demographic information was requested from respondents (all male), such as age group and training area. Regarding age, 55.4% of the sample is between 29 and 32 years old; 42.4% are between 33 and 36 years old; and 2.2% are 28 years old. Regarding the respondents' training area, more than half (53%) come from the humanities, 38.3% come from the natural sciences and 8.7% from the biological sciences.

Data Analysis: Modeling by Structural Equations (SEM)
We adopted the Structural Equation Modeling (SEM), a family of statistical models that seek to explain the relations between multiple variables simultaneously, and which has been considered particularly useful for the development and evaluation of theories (Hair, Hult, Ringle & Sarstedt, 2014).

For Hair et al. (2009) there are two main types of variables that are part of the SEM: (i) The exogenous latent variables, which are the constructs that explain other constructs in the model as the endogenous latent variables, are the constructs that are being explained in the model; (ii) endogenous latent variables, which are neither directly observable nor measurable, should be estimated indirectly, through observable variables. Following this precept, the model used for the article was designed with the minimum of three variables observed by construct (latent variable). Based on this structure, multiple observed variables were defined for each construct. The constructs (latent variables) with their respective definitions, topics, observed variables, and questionnaire items are described in Table 2.
Table 2. Categorization of Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Topic</th>
<th>Variable</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>Need for face-to-face interaction in classes or studies</td>
<td>Indiscipline and difficulties with time management</td>
<td>auto1</td>
<td>I prefer classes where I have face-to-face contact with the teacher</td>
</tr>
<tr>
<td></td>
<td>Degree of employee’s ability to learn alone and accomplish what he plans</td>
<td></td>
<td>auto2</td>
<td>I prefer to study alone than with other person(s)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>auto3</td>
<td>I’m disciplined</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>auto4</td>
<td>I have the ability to prioritize my activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>auto5</td>
<td>I have the ability to realize the things I have prioritized</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>auto6</td>
<td>I often postpone the things I have to do</td>
</tr>
<tr>
<td>Performance Expectation</td>
<td>&quot;Performance expectancy (adaptation of UTAUT)&quot;</td>
<td></td>
<td>edesem1</td>
<td>I consider that DE is useful to my work</td>
</tr>
<tr>
<td></td>
<td>Degree in which an employee believes that using the system will help him</td>
<td></td>
<td>edesem2</td>
<td>DE has allowed me to increase the quality of my work</td>
</tr>
<tr>
<td></td>
<td>achieve gains at work</td>
<td></td>
<td>edesem3</td>
<td>Using DE did not increase my productivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>edesem4</td>
<td>Using DE increased my chances of growing the company</td>
</tr>
<tr>
<td>Expectation of Effort</td>
<td>Degree of facility associated with system use</td>
<td>Ease of perceived use (adaptation of UTAUT) and Complexity</td>
<td>eesfor1</td>
<td>The DE system I use is clear and easy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>eesfor2</td>
<td>It was easy to acquire the ability to use DE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>eesfor3</td>
<td>I find it easy to use the resources of the DE system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>eesfor4</td>
<td>Learning to use DE was easy for me</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cond1</td>
<td>When there are problems in DE, it is easy to solve</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cond2</td>
<td>I have the resources needed to use the DE system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cond3</td>
<td>The DE system I use has many problems of functioning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cond4</td>
<td>A specific person (or group) is available to assist in difficulties</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cond5</td>
<td>I received incentive (s) to take distance learning courses</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>Degree in which an employee believes that there is an organizational and</td>
<td>Facilitating Technical Conditions (adaptation of UTAUT)</td>
<td>inter1</td>
<td>In the DE I had, there was a lot of interaction between the students</td>
</tr>
<tr>
<td></td>
<td>technical infrastructure to support the use of the system</td>
<td></td>
<td>inter2</td>
<td>In the DE I had, the teacher encouraged me a lot</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>inter3</td>
<td>In the DE I had, the interactivity between the teacher and the students was high</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>inter4</td>
<td>In the DE I had, feedback from the teacher was fast</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>inter5</td>
<td>In the DE I had, the teacher monitored my learning a lot</td>
</tr>
<tr>
<td>Interactivity</td>
<td>Degree of interactivity and timing between the employee student with the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tutor or with other students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Resistance to DE in CE

Degree in which the employee resists DE

Resistance to IT

resis1  I intend, by my own will, to continue using DE
resis2  I would recommend using DE to friends
resis3  Classes are more enjoyable than distance learning
resis4  Taking distance courses was a good thing for me.
resis5  Turning the company's face-to-face education to DE worries me
resis6  For me, there are more advantages to DE than disadvantages
resis7  If in my company there were a group of employees that likes DE, I will be part of it

More specifically, in this article we use the technique of Modeling by Structural Equations by Partial Least Squares - PLS, a technique that uses the method of ordinary least squares regression. We opted to use the SEM - MQP technique because area of study is in the public sector (a military institution) and since the main intention was to verify the behavior of said model in a totally opposite context. Thus, in addition to attempting to identify the factors that motivate or contribute to the resistance phenomenon, this article investigates and measures the applicability of the READEC Model in a sector not yet explored. This is in order to develop insights that can be useful in other contexts of analysis.

SEM-PLS functions as a multiple regression analysis (Hair et al., 2014). This feature makes SEM-PLS particularly valuable for exploratory research. Hair et al. (2014) argue that the importance of their use increases in problematic models. These problematic models routinely occur in the social sciences since they contain characteristics in which the data are not normal and the models are highly complex. According to Roberts, Thatcher and Grover (2010), Hair et al. (2014) and Ringle, Silva and Bido (2014), the following characteristics may justify its use: (i) no requirement for multivariate normality in data distribution; (ii) the possibility of using relatively small samples; (iii) the possibility of using training indicators.

The evaluation of the model in the context of the SEM-MQP was carried out in two stages. The first step refers to the analysis of the external model (measurement), which deals with the relationship between constructs and their indicators. The evaluation of the external model in this article included Compound Reliability (CR), Cronbach's Alpha, Extracted Mean Variance (VME) and Cross Loading (Cross Loading) and Fornell-Larcker criteria to assess discriminant validity (Fornell & Bookstein, 1982; Hair et al., 2014). The second step refers to the analysis of the internal (structural) model, which has as its premise the verification of its predictive relevance and the relation between the latent variables. In the structural model, the values and significance of the path coefficients, the Pearson coefficient of determination ($R^2$), the effect size ($f^2$) and the predictive relevance ($Q^2$) were calculated.

EVALUATION AND ANALYSIS OF RESULTS

By means of the appropriate statistical tests it is necessary to evaluate the quality of the model used. In this section, the measurement and structural models are evaluated, both in their original format and in their format after statistical adjustments. Parallel to the evaluation, there is an analysis of the research findings.
Evaluation of the Measurement and Structural Models

For the evaluation of the proposed hypothetical model, the first criterion to be verified, according to Hair et al. (2014) is the reliability of internal consistency. In this first approach, it was possible to verify whether the values related to Compound Reliability, Cronbach’s Alpha, and Extracted Mean Variance were within the limits established in the literature. As a reference of analysis, for models with exploratory purpose, it is recommended that the composite reliability is superior to 0.60 and, for confirmatory models, superior to 0.70 (Chin, 1998; Höck & Ringle, 2006). We observed that the latent variables (Effort, Interati, Desempen, and Resist) did not present the desirable scores for the composite reliability index, meaning, values above 0.90. These results demonstrate the existence of possible problems with internal consistency in the constructs mentioned. As for the EMV index, the latent variables Condifac and Autoefic presented values below 0.50, revealing that these variables explain less than the mean of the variance of their indicators. All the variables studied reached the values specified in the literature on the Cronbach’s Alpha index, as Table 3:

<table>
<thead>
<tr>
<th>Index</th>
<th>Latent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Esfor</td>
</tr>
<tr>
<td>Compound Reliability</td>
<td>0.963</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
<td>0.948</td>
</tr>
<tr>
<td>Extracted Mean Variance</td>
<td>0.866</td>
</tr>
</tbody>
</table>

It was also possible to discern that the observed variables auto1 (I prefer classes where I have face-to-face contact with the teacher*) and auto2 (I prefer to study alone than with other person(s)). The Autoefic construct presented lower loads than the other loads of the other constructs. That is to say, observed variables explain less of their latent variable (Autoefic) than other constructs and, for that reason, we opted to eliminate them. In the case of the Condifac construct, we chose to remove the observed variable cond5 (I received incentive (s) to take distance course). This decision was based mainly on the fact that the respective research item is not representative of the questioning of the Facilitating Conditions (Facilitating Technical Conditions/Infrastructure) made for the survey respondents. It is worth noting that the variable cond5 also exhibited the lowest load among the others of its construct, according to Table 4:

<table>
<thead>
<tr>
<th>Observed Variable</th>
<th>Latent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eesfor1</td>
<td>(0.912)</td>
</tr>
<tr>
<td>Eesfor2</td>
<td>(0.955)</td>
</tr>
<tr>
<td>Eesfor3</td>
<td>(0.927)</td>
</tr>
<tr>
<td>Eesfor4</td>
<td>(0.929)</td>
</tr>
<tr>
<td>Cond1</td>
<td>0.245</td>
</tr>
<tr>
<td>Cond2</td>
<td>0.016</td>
</tr>
<tr>
<td>Cond3</td>
<td>-0.136</td>
</tr>
<tr>
<td>Cond4</td>
<td>0.056</td>
</tr>
<tr>
<td>Cond5</td>
<td>-0.279</td>
</tr>
<tr>
<td>Inter1</td>
<td>0.022</td>
</tr>
<tr>
<td>Inter2</td>
<td>0.032</td>
</tr>
<tr>
<td>Inter3</td>
<td>-0.009</td>
</tr>
</tbody>
</table>
With the withdrawal of the observed variables auto1, auto2 and cond5, it was possible to continue the adjustment of the Hypothetical Model, since the EMV values referring to the constructs Autoefic and Condifac reached the desired score. We started the verification of the Structural Model, through the Variance Inflation Factor - VIF and the P-value. Regarding VIF, we observed that some observed variables related to the constructs effort (Expectation of Effort), performance (performance Expectation), interactivity, and resist (Resistance to DE in CE) presented border values and others showed values above the limit suggested by the literature, as shown in Table 5:

Table 5. VIF And P-Value - Hypothetical Model

<table>
<thead>
<tr>
<th>Observed Variable</th>
<th>VIF</th>
<th>P - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eesfor1</td>
<td>4.504</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>eesfor2</td>
<td>6.937</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>eesfor3</td>
<td>4.573</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>eesfor4</td>
<td>4.791</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>cond1</td>
<td>1.790</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>cond2</td>
<td>1.307</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>cond3</td>
<td>1.436</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>cond4</td>
<td>1.456</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>inter1</td>
<td>1.595</td>
<td>0.002</td>
</tr>
<tr>
<td>inter2</td>
<td>4.421</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>inter3</td>
<td>4.894</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>inter4</td>
<td>2.738</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>inter5</td>
<td>4.407</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>edesem1</td>
<td>5.326</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>edesem2</td>
<td>5.847</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>edesem3</td>
<td>1.608</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>edesem4</td>
<td>2.128</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>auto3</td>
<td>1.804</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
An analysis of Table 5 leads us to conclude that the high indexes and the borderline VIF presented are a reflection of the existence of a semantic overlap between the items of the observed variables. This high correlation confirms the presence of multicollinearity among the indicators. Despite this observation, according to Bollen (1989), in cases where there is multicollinearity among reflexive indicators, the consequences are minimal. This is because this correlation structure is justified by the very nature of the relationship between the indicators and the latent variable. In addition, Bollen (1989) states that by choosing indicators for latent variables, it is preferable to choose observed variables that are correlated with the construct. This rule is valid only for the choice of reflexive indicators.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Observed Variable</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectation</td>
<td>edesem1</td>
<td>I consider that DE is useful to my work</td>
</tr>
<tr>
<td></td>
<td>edesem2</td>
<td>DE has allowed me to increase the quality of my work</td>
</tr>
<tr>
<td></td>
<td>edesem3</td>
<td>Using DE did not increase my productivity</td>
</tr>
<tr>
<td></td>
<td>edesem4</td>
<td>Using DE has increased my chances of growth in the company</td>
</tr>
<tr>
<td>Expectation of Effort</td>
<td>eesfor1</td>
<td>The DE system I use is clear and easy</td>
</tr>
<tr>
<td></td>
<td>eesfor2</td>
<td>It was easy to acquire the ability to use DE</td>
</tr>
<tr>
<td></td>
<td>eesfor3</td>
<td>I find it easy to use the resources of the DE system</td>
</tr>
<tr>
<td></td>
<td>eesfor4</td>
<td>Learning to use DE was easy for me</td>
</tr>
<tr>
<td>Interactivity</td>
<td>inter1</td>
<td>In the DE I had, there was a lot of interaction between the students</td>
</tr>
<tr>
<td></td>
<td>inter2</td>
<td>In the DE I had, the teacher encouraged me a lot.</td>
</tr>
<tr>
<td></td>
<td>inter3</td>
<td>In the DE I had, the interactivity between the teacher and the students was high</td>
</tr>
<tr>
<td></td>
<td>inter4</td>
<td>In the DE I had, feedback from the teacher was fast</td>
</tr>
<tr>
<td></td>
<td>inter5</td>
<td>In the EAD I had, the teacher monitored my learning a lot</td>
</tr>
<tr>
<td>Resistance to DE in CE</td>
<td>resis1</td>
<td>I intend, by my own will, to continue using DE</td>
</tr>
</tbody>
</table>
I would recommend using DE to friends.

Classes are more enjoyable than distance learning.

Taking distance courses was a good thing for me.

Turning the company’s face-to-face education to EAD worries me.

For me, there are more advantages to DE than disadvantages.

If in my company there were a group of employees that likes DE, I would be part of it.

With further consideration of Table 6, most of the authors view VIF values above 5 as indicating a high degree of collinearity or multicollinearity between the independent variables. However, for others, the presence of multicollinearity is severe only with the Variance Inflation Factor- VIF greater than 10 (Hair et al., 2009; Kennedy, 2003; Myers, 1990). Freund and Wilson (2006) describe that for the nonoccurrence of problems with collinearity in the data, the VIF should present indexes between 1.0 and 10.0. The formula for calculating this statistic has the following characteristic: VIF = 1 / T = 1/1-R², where R² = Determination Coefficient or Explanation and T = Tolerance.

Tolerance, as presented in the VIF formula, is the inverse of this indicator. Thus, authors who suggest a VIF of 10 point to a tolerance of 0.10. In this case, it means that 10% of the variance is not redundant. Regarding the P-value, all the observed variables presented statistical significance. That is, they present a strong relation with their respective constructs.

**Evaluation of the Adjusted Measurement Model**

In compliance with the parameters defined in the literature for convergent validity, the indices presented in Table 7 indicate an adequate adjustment of the model, given the observed indicators:

<table>
<thead>
<tr>
<th>Index Description</th>
<th>Esforc</th>
<th>Condifac</th>
<th>Latent Variable</th>
<th>Autoefic</th>
<th>Resist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compound Reliability</td>
<td>0.963</td>
<td>0.813</td>
<td>0.940</td>
<td>0.924</td>
<td>0.858</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
<td>0.948</td>
<td>0.692</td>
<td>0.918</td>
<td>0.888</td>
<td>0.774</td>
</tr>
<tr>
<td>Extrated Mean Variance</td>
<td>0.866</td>
<td>0.524</td>
<td>0.759</td>
<td>0.753</td>
<td>0.611</td>
</tr>
</tbody>
</table>

To evaluate the discriminant validity, the Fornell-Larcker criterion and the Cross Loads were adopted. The values shown (diagonally) in Table 8 for the Fornell-Larcker indicator, showed that the constructs share more variance with their associated indicators than with any other construct.
Table 8. Fornell-Larcker Criterion - Adjusted Hypothetical Model

<table>
<thead>
<tr>
<th>Latent Variable</th>
<th>Esfor</th>
<th>Condifac</th>
<th>Interati</th>
<th>Desempen</th>
<th>Autoefic</th>
<th>Resist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esfor</td>
<td>(0.931)</td>
<td>0.511</td>
<td>0.531</td>
<td>0.426</td>
<td>0.448</td>
<td>0.487</td>
</tr>
<tr>
<td>Condifac</td>
<td>0.511</td>
<td>(0.724)</td>
<td>0.506</td>
<td>0.299</td>
<td>0.379</td>
<td>0.327</td>
</tr>
<tr>
<td>Interati</td>
<td>0.531</td>
<td>0.506</td>
<td>(0.871)</td>
<td>0.444</td>
<td>0.453</td>
<td>0.468</td>
</tr>
<tr>
<td>Desempen</td>
<td>0.426</td>
<td>0.299</td>
<td>0.444</td>
<td>(0.868)</td>
<td>0.336</td>
<td>0.800</td>
</tr>
<tr>
<td>Autoefic</td>
<td>0.448</td>
<td>0.379</td>
<td>0.453</td>
<td>0.336</td>
<td>(0.782)</td>
<td>0.368</td>
</tr>
<tr>
<td>Resist</td>
<td>0.487</td>
<td>0.327</td>
<td>0.468</td>
<td>0.800</td>
<td>0.368</td>
<td>(0.811)</td>
</tr>
</tbody>
</table>

In the examination of cross loads presented in Table 9, the values confirmed that their latent variables explain more of their own construct than any other variable in the adjusted model:

Table 9. Cross Loads - Adjusted Hypothetical Model

<table>
<thead>
<tr>
<th>Observed Variable</th>
<th>Esfor</th>
<th>Condifac</th>
<th>Interati</th>
<th>Desempen</th>
<th>Autoefic</th>
<th>Resist</th>
</tr>
</thead>
<tbody>
<tr>
<td>eesfor1</td>
<td>(0.912)</td>
<td>0.004</td>
<td>0.027</td>
<td>-0.019</td>
<td>-0.036</td>
<td>-0.014</td>
</tr>
<tr>
<td>eesfor2</td>
<td>(0.955)</td>
<td>-0.018</td>
<td>-0.043</td>
<td>-0.030</td>
<td>0.012</td>
<td>0.053</td>
</tr>
<tr>
<td>eesfor3</td>
<td>(0.927)</td>
<td>0.041</td>
<td>0.039</td>
<td>-0.008</td>
<td>-0.020</td>
<td>-0.036</td>
</tr>
<tr>
<td>eesfor4</td>
<td>(0.929)</td>
<td>-0.027</td>
<td>-0.022</td>
<td>0.057</td>
<td>0.043</td>
<td>-0.004</td>
</tr>
<tr>
<td>cond1</td>
<td>0.245</td>
<td>(0.828)</td>
<td>0.065</td>
<td>0.002</td>
<td>-0.042</td>
<td>-0.035</td>
</tr>
<tr>
<td>cond2</td>
<td>0.016</td>
<td>(0.636)</td>
<td>-0.362</td>
<td>-0.099</td>
<td>0.000</td>
<td>0.079</td>
</tr>
<tr>
<td>cond3</td>
<td>-0.136</td>
<td>(0.650)</td>
<td>-0.328</td>
<td>-0.070</td>
<td>-0.008</td>
<td>0.061</td>
</tr>
<tr>
<td>cond4</td>
<td>0.056</td>
<td>(0.682)</td>
<td>0.334</td>
<td>0.069</td>
<td>0.053</td>
<td>-0.120</td>
</tr>
<tr>
<td>cond5</td>
<td>-0.279</td>
<td>(0.584)</td>
<td>0.278</td>
<td>0.004</td>
<td>0.007</td>
<td>0.035</td>
</tr>
<tr>
<td>inter1</td>
<td>0.022</td>
<td>-0.127</td>
<td>(0.706)</td>
<td>-0.067</td>
<td>-0.043</td>
<td>0.184</td>
</tr>
<tr>
<td>inter2</td>
<td>0.032</td>
<td>0.027</td>
<td>(0.918)</td>
<td>0.061</td>
<td>0.010</td>
<td>-0.067</td>
</tr>
<tr>
<td>inter3</td>
<td>-0.009</td>
<td>-0.012</td>
<td>(0.930)</td>
<td>-0.095</td>
<td>0.032</td>
<td>0.101</td>
</tr>
<tr>
<td>inter4</td>
<td>0.073</td>
<td>0.048</td>
<td>(0.859)</td>
<td>0.062</td>
<td>-0.043</td>
<td>-0.165</td>
</tr>
<tr>
<td>inter5</td>
<td>-0.107</td>
<td>0.037</td>
<td>(0.923)</td>
<td>0.029</td>
<td>0.031</td>
<td>-0.022</td>
</tr>
<tr>
<td>edesem1</td>
<td>0.039</td>
<td>-0.023</td>
<td>-0.026</td>
<td>(0.926)</td>
<td>0.065</td>
<td>0.135</td>
</tr>
<tr>
<td>edesem2</td>
<td>-0.012</td>
<td>-0.047</td>
<td>0.048</td>
<td>(0.937)</td>
<td>0.038</td>
<td>0.054</td>
</tr>
<tr>
<td>edesem3</td>
<td>0.026</td>
<td>0.050</td>
<td>-0.162</td>
<td>(0.757)</td>
<td>-0.111</td>
<td>-0.184</td>
</tr>
<tr>
<td>edesem4</td>
<td>-0.053</td>
<td>0.033</td>
<td>0.121</td>
<td>(0.838)</td>
<td>-0.014</td>
<td>-0.044</td>
</tr>
<tr>
<td>auto1</td>
<td>0.229</td>
<td>-0.270</td>
<td>-0.248</td>
<td>0.031</td>
<td>(0.045)</td>
<td>0.673</td>
</tr>
<tr>
<td>auto2</td>
<td>0.265</td>
<td>-0.047</td>
<td>-0.388</td>
<td>0.243</td>
<td>(0.166)</td>
<td>-0.060</td>
</tr>
<tr>
<td>auto3</td>
<td>-0.106</td>
<td>-0.074</td>
<td>0.148</td>
<td>0.018</td>
<td>(0.809)</td>
<td>-0.009</td>
</tr>
<tr>
<td>auto4</td>
<td>0.051</td>
<td>-0.037</td>
<td>-0.006</td>
<td>0.034</td>
<td>(0.886)</td>
<td>-0.047</td>
</tr>
<tr>
<td>auto5</td>
<td>-0.014</td>
<td>-0.029</td>
<td>-0.002</td>
<td>-0.030</td>
<td>(0.860)</td>
<td>0.058</td>
</tr>
<tr>
<td>auto6</td>
<td>-0.004</td>
<td>0.273</td>
<td>-0.073</td>
<td>-0.119</td>
<td>(0.504)</td>
<td>-0.043</td>
</tr>
<tr>
<td>resis1</td>
<td>0.038</td>
<td>0.028</td>
<td>0.026</td>
<td>-0.200</td>
<td>-0.048</td>
<td>(0.849)</td>
</tr>
<tr>
<td>resis2</td>
<td>0.032</td>
<td>0.079</td>
<td>0.023</td>
<td>-0.103</td>
<td>-0.042</td>
<td>(0.904)</td>
</tr>
<tr>
<td>resis3</td>
<td>0.154</td>
<td>-0.180</td>
<td>-0.195</td>
<td>-0.181</td>
<td>-0.173</td>
<td>(0.544)</td>
</tr>
<tr>
<td>resis4</td>
<td>-0.058</td>
<td>0.041</td>
<td>0.040</td>
<td>0.266</td>
<td>0.068</td>
<td>(0.895)</td>
</tr>
<tr>
<td>resis5</td>
<td>-0.036</td>
<td>0.002</td>
<td>-0.103</td>
<td>-0.116</td>
<td>0.149</td>
<td>(0.691)</td>
</tr>
<tr>
<td>resis6</td>
<td>-0.025</td>
<td>-0.002</td>
<td>0.042</td>
<td>0.311</td>
<td>-0.014</td>
<td>(0.834)</td>
</tr>
<tr>
<td>resis7</td>
<td>-0.054</td>
<td>-0.036</td>
<td>0.071</td>
<td>-0.063</td>
<td>0.024</td>
<td>(0.894)</td>
</tr>
</tbody>
</table>

With this, the discriminant validity of the adjusted model is ensured, and the analysis of the measurement model is concluded.
Evaluation of the Adjusted Structural Model

Following the second part of the analysis, the coefficients of determination of Pearson ($R^2$), predictive relevance index ($Q^2$) and effect size ($f^2$) were surveyed. As for the indices presented in Table 9, we can affirm that the measures presented, have demonstrated a significant effect, as Ringle, Silva and Bido (2014) suggest, for the area of social and behavioral sciences, that $R^2$ equal to 2% is classified as a small effect, 13% as an average effect and 26% as a substantial effect.

<table>
<thead>
<tr>
<th>Table 10. Pearson Coefficient ($R^2$) - Adjusted Hypothetical Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
</tr>
<tr>
<td>Pearson Coefficient of Determination ($R^2$)</td>
</tr>
</tbody>
</table>

In Table 11, the presented measures revealed the existence of above-average predictive relevance, confirming the accuracy of the model. In summary, the presented values demonstrate how much the model in question approaches what is expected of it:

<table>
<thead>
<tr>
<th>Table 11. Predictive Relevance Indicator ($Q^2$) - Adjusted Hypothetical Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
</tr>
<tr>
<td>Predictive Relevance - Stone-Geisser ($Q^2$)</td>
</tr>
</tbody>
</table>

According to Table 12, the indices referring to the $f^2$ indicator presented a moderate to strong correlation between the exogenous and endogenous latent variables, with the exception of the Autoefic variable that presented a value of 0.44 considered weak, but still above the lower limit of 0.02:

<table>
<thead>
<tr>
<th>Table 12. Effect Size Indicator ($f^2$) - adjusted hypothetical model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endogenous Variable</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Esforc</td>
</tr>
<tr>
<td>Condifac</td>
</tr>
<tr>
<td>Interati</td>
</tr>
</tbody>
</table>

For a better visualization of the adjusted hypothetical model, the model path diagram was constructed. In it, all relations between latent variables (constructs) and observed variables are represented, as well as existing relations of latent variables (constructs) to each other, according to Figure 3:
By evaluating the coefficients ($R^2$) shown in the diagram, we evaluated the portion of the variance of the endogenous variables that are explained by the exogenous variables, indicating the quality of the adjusted model. Regarding the values related to the P-value, we can observe that, except for the Condifac construct (Facilitating Conditions), the other constructs presented statistical significance. In other words, the hypothetical relationships between the constructs of the model presented a strong relation.

The Condifac (Facilitating Conditions) construct had the presupposition to measure the degree to which an official believes that there is an organizational and technical infrastructure to support the use of the system. It showed little statistical relevance, considering that the military institution researched had an organizational and technical infrastructure to attend the military students and a system of high technological level.

Therefore, for the reasons described in the previous paragraph, the Condifac construct did not have a substantial influence on the construct Desempen (Performance Expectation) that was translated as significant for research. The hypothesis H4 (The construct Facilitating Conditions has a positive influence on the Performance Expectation construct) could not be accepted. In spite of this fact, the high $R^2$ values of constructs and path loads suggest that the READEC Model developed and validated by Albertin and Brauer (2012) was adequate to predict the main factors that explain the resistance of DE in the analyzed context.

DISCUSSIONS AND CONCLUSION

Over the years, technological changes involving the educational process have finally resulted in the education modality called distance education (DE). An outcome of this perceived development in the teaching/learning process is that DE has been adopted as a tool and applied in education, in professional qualification and training programs, and in corporate education (CE). It has become one of the greatest tools for democratization of information.

Despite the increasing use of DE in the corporate scenario in the past decades, there is still significant resistance to this educational modality. This study is a response to the absence of established theoretical models that are able to deal with and predict this resistance. This article had the objective of identifying and analyzing the main factors that explain the resistance to distance education in corporate education. To achieve this, we use the READEC Model, developed and validated by Albertin and Brauer (2012).
Testing and suggesting modifications in theories can be considered as theoretical contributions (Whetten, 1989; Corley & Gioia, 2011; Byron & Thatcher, 2016). From this reflection comes the main contribution of our article as we tested the READEC theory (Albertin & Brauer, 2012) and, of the five hypotheses originally proposed, one was rejected. With this, the ability to explain the model was increased, which means that the original model was polished.

The results of the study showed that the self-efficacy and performance expectation dimensions directly and positively influence the resistance to the DE in the CE. Additionally, the effort expectation, facilitating conditions, and interactivity dimensions are constructs antecedent to the performance expectation. Contrary to the previous theory, the results also indicated that the perception about the organizational infrastructure was not significant to explain the resistance to DE, which allows us to bring new insights about this phenomenon.

The findings of this research infer that the lower the expectation of difficulty or effort to take a distance course, the greater students’ perception are of the value of the course to increase their performance. The greater the perception of performance, the less likely the distance course will be rejected or resisted. Another important construct to explain this resistance is the ability of students to be self-efficacious: students who need a lot of teachers saying what they should do and how they should do tend to be less resistant to face-to-face courses as there is direct contact between instructor and learner. Therefore, it is considered fundamental - and we see this as a managerial contribution of our study - that the organization knows the profile of its students well before transitioning from a culture of courses 100% in-person to 100% distance courses. If resistance is high, the less tends to be learned and, consequently, the transfer of learning to the workplace will also be less. This makes training an expense rather than an investment. Moreover, unlike Albertin and Brauer (2012), the facilitating conditions, such as organizational and technical infrastructure (Venkatesh et al., 2003), did not significantly influence the course's expectation of performance, suggesting this theoretical frailty we address earlier. Such influence may not occur in organizational contexts where members are accustomed to working in adverse, challenging, and different conditions, such as the Army, consulting firms, and startups.

Despite its contribution to the field, this article presents limitations deriving from the method employed. For example, the study only gathered results relating to the perceptions of men. This is due to the studying being carried out in a military division. We believe that the collection of women’s perceptions is fundamental to the understanding of this phenomenon. Also, with both views, it would be possible to verify if both genders understand resistance in a similar or divergent way. Another limitation of the study is the use of an electronic questionnaire, which has a broad scope and speed of collection, but makes it impossible (or at least makes it difficult) for the respondents’ questions to be answered and may lead to distortions of answers due to misunderstandings about the survey statements.

During the development of this article, important insights emerged for future research on the subject. These insights arose from the literature analysis, the data collected, and our reflections on resistance to DE. In this sense, we believe that it is necessary for future research to, in a qualitative way, propose complementary constructs with the aim of expanding the READEC model used in this article. It is a new model and that still needs to be understood in other contexts and methods for greater acceptance by the academic community and for managerial practices. We also understand that there are still few specific empirical studies on the phenomenon discussed here, and, therefore, we suggest research that brings the practical vision of other groups, such as managers, teachers and tutors. This would also include those who have a greater variation of age and gender. We
argue that these efforts will be fundamental to the proper use of distance education, an important tool that can contribute greatly to the new challenges of global technology.

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POLICY RECOMMENDATIONS FROM EMPLOYERS FOR ENHANCING SKILLS THROUGH ODL

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ABSTRACT

This paper aims at seeking recommendations for the Open and Distance Learning (ODL) policy from the industry to ensure learners graduating from ODL system are employable and are at par with those who have graduated from conventional system. Survey from total 97 employers spread over 7 industry sectors indicated that policy intervention is required to enhance skill development through ODL. This will enable ODL system and its learners to overcome major challenges related to credibility and recognition. These recommendations stressed on enhancing the quality of ODL education and skill development through collaboration between academia and industry and use of technology.

It is highly advocated that government agencies should ensure that quality parameters like recognition, accreditation, industry relevant curricula, be implemented and fulfilled by ODL institutions as well. Apart from the core subject knowledge, employers also stressed upon the need to foster employability skills such as problem solving, critical thinking etc. in the curriculum. Both the quality of ODL programmes and its linking with skill development will enable ODL system to bridge the gap between demand and supply of skilled manpower.

The herculean task of skilling millions of people in India can be achieved through collaboration and use of technology. Collaboration is the key factor to bring about synergy between academia and industry. It will enable the learners’ job ready and give productive output at their work places, there by contributing to the economic development of the country. Alliance will also provide learners a smooth transition from learning to earning.

Keywords: ODL, skill development, industry, employment, policy.
INTRODUCTION

India is a country with significant knowledge economy and availability of human resource at all the levels. However, India still lacks skilled human resource despite having huge work force (Mohapatra and Mahapatra, 2016). It is therefore important that policy makers must focus on imparting the relevant and quality skills as they provide better employment opportunities (Aggarwal, 2016). It will improve the capability of the present system and will enable to meet the demand supply gap in the emerging globalized economy.

In recent years the Indian policy makers are aiming towards making India as a biggest skilled human resource supplier to the global economy (FICCI, 2015). National Policy on Skill Development was formulated to address different challenges in skill development. The government has also listed skill development as one of its priorities which aims to enhance participation of youth, seek greater inclusion of women, disabled and other disadvantaged sections into the workforce.

The National Skill Development Mission, titled as ‘Skill India’, under the Ministry of Skill Development and Entrepreneurship (MSDE) is supported by three other institutions: National Skill Development Agency (NSDA), National Skill Development Corporation (NSDC), and Directorate General of Training (DGT). The Mission has been developed to create convergence across sectors and States in terms of skill training activities. Seven submissions have been proposed initially to act as building blocks for achieving overall objectives of the Mission. They are: (i) Institutional Training, (ii) Infrastructure, (iii) Convergence, (iv) Trainers, (v) Overseas Employment, (vi) Sustainable Livelihoods, (vii) Leveraging Public Infrastructure. (http://www.skilldevelopment.gov.in/nationalskillmission.html)

Skill Development in India has its own set of challenges. Since, skill development in India does not show the inherent linking with academia and industry, there is a gap between skills required by the industry and those imparted through the educational and training institute due to lack of collaboration and interaction. Moreover, vocational institutes in India focus mainly to impart technical skills only. This leads to unemployable graduates. Dissatisfied with the current educational deliverable, many companies have made their own Training, Research and Development centers through which they develop human resource. Though the Skill Development also focuses on the Public Private Partnership (PPP) Model there is lack of synergy among Indian formal education system, skill development environment and industry requirement (Sharma and Nagendra, 2016).

With changing global economic environment, there is intense need to incorporate dynamic changes in the skill development system of India. This may be done by making skill development an integral part of the educational curriculum and life long learning. This can be achieved most effectively only by the active involvement of the industry in the curriculum development and apprenticeship training.

Moreover, formal education system has the limited capacity to bridge the demand supply gap in skill development for large population of India due to inadequate infrastructure constraint in comparison to huge demand of labour. The problem of insufficient infrastructure is same in big cities as well as small towns and villages. There aren’t many trained and highly skilled trainers available either, which further make skill development a big challenge.

In such scenario, Open and Distance learning (ODL) has the potential to impart training and skill development in India as it has the capability to reach to the masses. ODL can contribute towards Technical and Vocational Education and Training (TVET) to the large section of the society especially those, who in the normal course is beyond the umbrella of higher education. Skill development through ODL is also the need of time due to requirement of on-job learning to keep pace with changing technologies. Therefore, there
is a need for collaboration with industry/ employer to establish a robust system for skill development through ODL.

There have been several case studies in which collaboration with industry especially technical courses have yielded significant results. Indira Gandhi National Open University (IGNOU), the largest Open University in the world launched Bachelors of Science (B.Sc.) degree programme in collaboration with Director General of Shipping (DGS) in 2004 in order to develop human resource for the career in Merchant Navy. Total 3147 learners were enrolled in this programme between 2007-10 (IGNOU, 2017). The employability of the learners after the course completion was found to be hundred percent.

On similar lines, the Advanced Certificate in Power Distribution Management (ACPDM) programme was developed by IGNOU in collaboration with the Ministry of Power for professionals employed in electrical power utilities or electricity sector to upgrade their skills. More than 3500 learners were trained under this programme between 2006-2015 (IGNOU, 2017).

Such experiments of collaborative initiative clearly demonstrate the viable model for skill development which not only assures employability to learners but also a rewarding manpower to the industry. However, TVET through ODL is going through its own challenges like credibility and recognition issues due to various reasons (Mishra & Bartram, 2002). In case of India education, skill development and employment are no where whether it is imparted through ODL mode or conventional Face to Face mode. In such a scenario, a policy intervention is needed to build the collaboration between institutions (be it ODL or conventional system) providing skill development and employer. This could be only possible if a national qualification framework be developed which comprises of the stakeholders from the academia, employers and skill development. Such a framework will ensure parity and recognition among the two education system. This paper aims to seek recommendations in the ODL policy from the industry to ensure learners graduating from ODL system are employable and are at par with those who have graduated from conventional system.

METHOD

The purpose of this study was to seek recommendations in the ODL policy from the industry to ensure learners graduating from ODL system are employable and are at par with those who have graduated from conventional system. This study was survey research under quantitative research method which falls under category of descriptive research. The deliberate of the descriptive research studies are to acquire information related to present status of a given event. The descriptive research is to explore "what exists" with respect to variables or conditions in a situation. While conducting descriptive research there is a need to identify the type of data obtained and exact nature of its population (IGNOU, 2001).

The survey was developed to collect inputs from employers. It was reviewed for content validity by experts in the domain of ODL. After incorporating the comments and suggestions from the reviewers the questionnaire was tested for its reliability through test-retest method. The final questionnaire consisted of five items to evaluate the recommendations given by the employers. The survey questionnaire was administered online to collect the data.

RESULT AND DISCUSSION

Ninety-seven (97) employers in total responded to the survey. The data was analyzed under the following two main heads:

- Employers’ profile and
- Recommendations from the employers.
Employers’ Profile
Employers’ profile was analysed based on their business domain and the employee size of the business/organisation/company.

Business Domain
The business domain of the employers who responded is given in Table 1.

Table 1. Business Domain of the Employers

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Business Domain</th>
<th>No. of responses</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Education, Training and R&amp;D</td>
<td>33</td>
<td>34.02</td>
</tr>
<tr>
<td>2</td>
<td>Information Technology</td>
<td>14</td>
<td>14.43</td>
</tr>
<tr>
<td>3</td>
<td>Defense</td>
<td>8</td>
<td>8.25</td>
</tr>
<tr>
<td>4</td>
<td>Manufacturing</td>
<td>7</td>
<td>7.22</td>
</tr>
<tr>
<td>5</td>
<td>Services</td>
<td>4</td>
<td>4.12</td>
</tr>
<tr>
<td>6</td>
<td>Engineering</td>
<td>2</td>
<td>2.06</td>
</tr>
<tr>
<td>7</td>
<td>Government</td>
<td>2</td>
<td>2.06</td>
</tr>
<tr>
<td>8</td>
<td>Others</td>
<td>10</td>
<td>10.31</td>
</tr>
<tr>
<td>9</td>
<td>Unanswered</td>
<td>17</td>
<td>17.53</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>97</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

According to the survey, as presented in Table 1, 34% of employers belong to academic domain such as Education, Training and Research and Development. 14% of employers were from Information Technology domain. 34% employers belong to various sectors comprised of Defense, Manufacturing, Services, Engineering and Government. While 18% employers did not respond to it.

Size of the Business/Organisation/Companies
The size of various organisation/companies from which employees responded could be estimated from the number of employees which is provided in Table 2. According to the table, 34% of the employers had small size of business with less than equal to 25 employees. While, 26% of employers had large business size with more than one thousand employees on the roll. Remaining 40% had medium size business whose employees varied between 26 to 1000 in numbers.

Table 2. Number of Employees on roll

<table>
<thead>
<tr>
<th>S. No.</th>
<th>No. of Employees</th>
<th>No. of responses</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;=25</td>
<td>33</td>
<td>34.02</td>
</tr>
<tr>
<td>2</td>
<td>26-100</td>
<td>20</td>
<td>20.62</td>
</tr>
<tr>
<td>3</td>
<td>101-1000</td>
<td>19</td>
<td>19.59</td>
</tr>
<tr>
<td>4</td>
<td>&gt;1000</td>
<td>25</td>
<td>25.77</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>97</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Recommendations from Employers

Recommendations from Employers were received in the areas of Skill Development and its driving forces, areas for collaboration and overall improvement of quality of ODL.

Skill Development

Employers strongly seek academic credentials and subject knowledge for all type work profile. It is also important for employers that employee should be equipped with professional skills such as oral and written communication, collaboration and teamwork, and critical thinking and problem-solving, along with innovative and entrepreneurial thinking and the ability to contribute to multidisciplinary teams which are very critical to work in the corporate sector (Council of Graduate Schools and Educational Testing Service, 2012).

According to the survey, most important recommendation of the employers was to stress upon the Skill Development reforms. Life skills required in employable graduates by employers are given in Table 3. 86.75% of employers were of the opinion that it is important for ODL graduates to be competent in life skills like communication, critical thinking skills, problem solving skills and many more.

All these skills are termed as soft or professional skills. In this competitive job market, recruitment criteria do not end at qualification or technical level. Presence of soft skills in the prospective employee gives an edge of others candidates. Recruiters are also interested in people who have the personality that reflect leadership, team work spirit, good communication etc. Soft skills are also important while dealing with clients as well as interacting with colleagues. Soft skills are valued as they enable people to work in teams while maintaining a productive and healthy work environment in organisations as a whole (Robles, 2012).

By developing these skills, their prospects of getting employment and further rise in the career path may be augmented in their respective job domains. Communication skill (95.88%) was ranked as the most important skills which is required among job seekers. Apart from communication, other important skills were creative thinking (92.78%), problem solving (92.78%) and planning skills (91.75%).

Literature suggests that ODL has the inherent potential to inculcate communication skills (like listening, reading, writing and oral skills), intellectual skills (reasoning abilities) and specialized skills (scientific and technological abilities as well as management skills). The distance learning institutions does not offer classroom-based instructions as in conventional education system. Distance learning involves geographic separation of teachers and students, however, there is constant academic interaction through the use of various technologies to facilitate student-teacher and student-student communication. These days however, various means of electronic communications, such as e-mail, mobile phones are used, over traditional forms of communication, such as the postal system. This leads learners to keep working up their reading, listening as well as writing skills in order to communicate effectively. Learners also need to go through their study material mateirals independently apart from their responsibilities at home or at office which makes good at multi-tasking and managing their commitments. There is no better way to impart management skills than the real life challanges and targets in front of learners. The requirements of these skills for the job seekers have also been highlighted by Gauvreau et al., 2016. Besides imparting the skills ODL also empowers its learners with decision making, taking responsibilities and ability to make informed choices (IGNOU, 2013). It was further demonstrated that these skills can effectively be imparted through technological intervention. Therefore, we can say that ODL can develop these skills as effectively as any formal system.
Table 3. Skills required for employability

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Responses</th>
<th>No. of responses</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communication skills</td>
<td>93</td>
<td>95.88</td>
</tr>
<tr>
<td>2</td>
<td>Problem solving skills</td>
<td>90</td>
<td>92.78</td>
</tr>
<tr>
<td>3</td>
<td>Creative thinking</td>
<td>90</td>
<td>92.78</td>
</tr>
<tr>
<td>4</td>
<td>Planning skills</td>
<td>89</td>
<td>91.75</td>
</tr>
<tr>
<td>5</td>
<td>Teamwork</td>
<td>87</td>
<td>89.69</td>
</tr>
<tr>
<td>6</td>
<td>Decision making skills</td>
<td>84</td>
<td>86.60</td>
</tr>
<tr>
<td>7</td>
<td>Multitasking</td>
<td>83</td>
<td>85.57</td>
</tr>
<tr>
<td>8</td>
<td>IT Skills</td>
<td>81</td>
<td>83.51</td>
</tr>
<tr>
<td>9</td>
<td>Ability to apply knowledge to real world settings</td>
<td>81</td>
<td>83.51</td>
</tr>
<tr>
<td>10</td>
<td>Leadership skills</td>
<td>80</td>
<td>82.47</td>
</tr>
<tr>
<td>11</td>
<td>Analytical thinking Skills</td>
<td>80</td>
<td>82.47</td>
</tr>
<tr>
<td>12</td>
<td>Global perspective</td>
<td>80</td>
<td>82.47</td>
</tr>
<tr>
<td>13</td>
<td>Critical thinking Skills</td>
<td>76</td>
<td>78.35</td>
</tr>
</tbody>
</table>

* Respondents may select more than one option, so percentages may add up to more than 100%.

Driving Forces for Skill Development

Having discussed about skill development to improve employability among ODL graduates, it is also important to learn and understand its driving forces from the perspective of employers. According to the survey, employers feel that the key to effective skill development among learners is the collaboration. As per Table 4, 93.8% employers have the opinion that collaboration between industry and academia is the key factor to bring about synergy between academia and industry. Academia need to understand the skill set which is required in the coming time. It is very important for the academia to develop a course curriculum which is relevant to the changing industry need or else it can create gap resulting in unemployable youth. Collaboration also enhances the quality of education which can be gauged through the employability quotient of the institute. Industry led training will make the learners' job-ready and give productive output at their work places, thereby reducing the cost of training after recruitment. It will therefore contribute to the economic development of the country. Alliance will also provide learners a smooth transition from learning to earning. Thus pro-active involvement of industry with academia is a profitable proposition for both stakeholders. Various areas in which collaboration can take place has been listed in Table 5.

Apart from collaboration, another important force which leads to skill development is the use of technology. Technology has been credited by 75.3% of employers for bringing momentum which can skill millions of people in the country. As technology is advancing, its costs are dropping. It has become cheaper and thus more affordable to low-level income group. This has increased its penetration in the society. According to the study conducted...
by Author, 2014, ICT infrastructure is not a constraint at learner level as most of them are equipped with one or more ICT based devices.

Social networking using technology has redefined collaboration like never before. Social media such as blogs, wikis, Skype or Google Hangout, Facebook; WhatsApp have become a global platform for learners discuss, learn and enrich their learning experience through shared interaction. Interactivity of these media has made tremendous contribution in bridging the gap between teachers and learners (Mnkandla and Minnaar, 2017). Hence, there is a need to generate ICT based tutorials complemented with social networking tools for learning and teaching process in order to achieve skill development goals.

Mobile learning (m-learning) is further revolutionizing the education by providing 'Just in time' learning that will provide ready access to knowledge. m-learning has the potential to engage the learner to a greater extent. It enhances the collaboration and didactic conversation, thereby reducing the feeling of isolation for learners in an ODL system (Author, 2017). However, m-learning is still at its nascent phase and hence facing several challenges like lack of support for instructional design for m-learning; lack of institutional policy for m-learning, lack of infrastructure/technological support. It is therefore important for institutions to adopt policy to implement m-learning in order to provide a guiding framework to develop implement it successfully (Author, 2016).

Another education technology, Massive Open Online Courses (MOOCs) has opened educational avenues by providing learning experience to those who cannot afford to attend universities, resulting in large number of enrolments across the globe. With the development of MOOCs, it has becoming much easier, affordable and flexible way to provide access to the quality learning resources cutting across geographical barriers (Gamage, et al., 2016).

The project, 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) has been initiated by Ministry of Human Resource Development (MHRD), Government of India. SWAYAM aims at bridging 'Digital Divide' providing an integrated portal for online courses, from High School till all higher education and skill sector courses to ensure that students get access to quality learning material through ICT and opportunities for a life-long learning. (https://swayam.gov.in/About)

However, the success of MOOCs is still questionable. Despite large number of enrollments, MOOCs is facing immense dropouts during the course delivery.

Table 4. Driving Forces for Skill Development

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Responses</th>
<th>No. of responses</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collaboration between industry and academia</td>
<td>91</td>
<td>93.8%</td>
</tr>
<tr>
<td>2</td>
<td>Use of technology</td>
<td>73</td>
<td>75.3%</td>
</tr>
</tbody>
</table>

* Respondents may select more than one option, so percentages may add up to more than 100%.

Areas for Collaboration

Employers have recommended various areas where collaboration can be carried out between industry and academia. These areas are listed in Table 5. According to the table, the most important area of collaboration is to provide employment to the learners after the completion of the course (77%), followed by collaboration while initiating a new programme as per industry needs (74.3%) and hands-on experience and training (74.3%).

While, it is important for employers to seek fresh graduates, it is extremely important that employers too have a say in the initiation of new programmes and designing of the curriculum. This shall enable development of industry relevant programmes. Such type of
collaboration will reduce the gap between what is taught and what is used in the real life scenario. Hands on training, in consultation or in collaboration with industry at the time of education will make learners’ job ready and enable them to give productive output at their work places, there by contributing to the economic development of the country. Such type of alliance will also facilitate learners in providing learners a smooth transition from learning to earning.

### Table 5. Areas for Collaboration

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Areas of collaboration</th>
<th>No. of Responses</th>
<th>Response %*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Providing employment to learners after course completion</td>
<td>57</td>
<td>77.0%</td>
</tr>
<tr>
<td>2</td>
<td>Initiating a new programme</td>
<td>55</td>
<td>74.3%</td>
</tr>
<tr>
<td>3</td>
<td>Providing hands-on experience and training</td>
<td>55</td>
<td>74.3%</td>
</tr>
<tr>
<td>4</td>
<td>Framing the curriculum</td>
<td>48</td>
<td>64.9%</td>
</tr>
<tr>
<td>5</td>
<td>Providing internship and income</td>
<td>47</td>
<td>63.5%</td>
</tr>
<tr>
<td>6</td>
<td>Developing the delivery mechanism</td>
<td>43</td>
<td>58.1%</td>
</tr>
<tr>
<td>7</td>
<td>Designing the instruction</td>
<td>42</td>
<td>56.8%</td>
</tr>
</tbody>
</table>

* Respondents may select more than one option, so percentages may add up to more than 100%.

**Recommendations from Employers for Improvement of Quality of ODL**

Employers strongly feel that ODL has got immense potential to reach the masses across location, culture, perception, age, gender and time in a cost effective way. It is the answer to the challenges which convention higher education is facing today. It is therefore important to regularize and introduce reforms to preserve and revitalize ODL through policy interventions. Recommendations from employers stressed upon the quality of ODL education.

The quality can be regulated with the support of the government through (a) regulatory collaboration between various regulatory agencies like University Grant Commission (UGC), All India Council for Technical Education (AICTE) etc., to support and strengthen ODL (b) accreditation of ODL institutes to maintain quality and (c) recognition of degrees. Collaboration will bring together leaders in the field of Open and Distance Education for a comprehensive overview of this rapidly expanding system of Education, Training and Research & Development.

With advancing globalization, accreditation and standards have become an integral part of Higher Education. For this purpose, there is a need to develop a system of accreditation for ODL institutes and programmes offered by them. It is important to deliberate on the strategy to identify broad parameters for quality assurance of various systems and sub-systems of ODL for the purpose of accreditation. Accreditation can meaningfully bring quality in ODL and enable ODL system to address the challenge of recognition of degrees. It will be a great step towards bringing ODL at par with the mainstream Higher Education System and contribute to the national agenda. It will foster democratization of Higher Education due to which ODL was primarily conceived.

**CONCLUSION**

This research study has highlighted the major aspects to be looked upon for improving the skill development through ODL system. Employers, being an important stakeholder needs to be taken into consideration for introducing and implementation of reforms. In developing countries like India there is a stigma in the industry with the Technical and
Vocational Education Training obtained through ODL. There is a need to change the mindset of the industry which is so used to age’s old formal education system. However, this apprehension of the industry can be changed through

- Policy intervention from the policy makers
- Seeking the employers view in policy forming
- Introducing industry relevant programmes
- Involving the employers during curriculum planning and development. This will also help them to understand the ODL system.
- Incorporating appropriate technologies
- Incorporating hands-on and apprenticeship
- Inbuilt quality control and quality assurance

It is suggested that government agencies should implement recognition, accreditation, and industry relevant curricula. Professional skills should be made an integral part of academic programmes to make the learners job ready. Both the quality of ODL programmes and its linking with skill development will enable ODL system to bridge the gap between demand and supply of skilled manpower. Employers were also positive about the use of technology for imparting skills.

Cooperation and collaboration are known for facilitating and implementing ideas in a meaningful way however it is one of the most challenging aspects in an organizational functioning. Policy intervention at government level is much needed call of the time for ODL system. While it is important for the system to work towards the quality of education, it is also important to rope in hands-on experience and training within the curriculum so that life skills required in the jobs can be developed. ODL institutions need to collaborate and use technology for the skill development of ODL graduates and raising their employability quotient.

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THE USE OF ICT TOOLS IN E-MENTORING: A CASE STUDY

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ABSTRACT

This is a case study designed with qualitative research pattern. It investigated the use of information and communication technologies in the e-mentoring process. The study group consisted of 44 undergraduate students as mentees and 8 graduate students as mentors. The program was carried out in group mentoring model in which graduate students were appointed as e-mentors for the undergraduate students for developing multimedia projects. The study data were collected using the project reports prepared by mentors and mentee groups, system logs of the interaction areas, observational notes of the researcher, and written forms seeking opinions of the mentees about the process. The data collected with different instruments were analysed with separate content analysis. It was found out that e-mail, social networking, phone conversations, SMS, instant mobile messaging applications, online storage, online documents, blog, LMS and teleconference technologies were utilized to provide interaction in the e-mentoring process. Among those, instant messaging and social networking sites proved the most effectively used ones, which the participants are also accustomed to in their daily lives. Most of the participants found the ICT tools used sufficient for interaction in the process. Still, some mentors and mentees stated that face-to-face interactions should also take place in the e-mentoring process.

Keywords: E-mentoring, group mentoring, mentor, mentee, ICT tools, interaction.

INTRODUCTION

Today understanding of education requires acquisition of knowledge through experience, not ready presentation of it. In today's setting, the need has emerged to create environments that enable learners to learn by doing and living. In such learning environments, mentoring practices are seen to become increasingly widespread. Mentoring means training and counselling of a relatively less experienced and competent person on occupational and personal development by a more experienced and skilled one (Anderson & Shannon, 1988). In this context, the person who is experienced is called 'mentor', and the less experienced person is called 'mentee' (Singh, Bains, & Vinnicombe, 2002; Jacobi, 1991). Related studies reveal that the term mentor is recognized in the international literature; on the other hand, the term mentee is replaced with alternatives such as apprentice, protege, or student at times (Kahraman, 2012). According to Ismail and Arokiasamy (2007), the rationale for mentoring is extended by social constructivist learning theory. Landsberg (2015) states that mentoring is a role that includes guidance and counselling. Homitz and Wadia-Fascetti (2008) think that the main function of a mentor is to help learners reach their goals by means of the right questions leading to independent thinking, but not to feed them with knowledge.

It is known that classical mentoring practices whereby an experienced and specialized mentor provides individual counselling in a sharing, supporting and encouraging role date back to Greek mythology (Mueller, 2004). The history presents far more than few examples of those who paved the way for successors with their knowledge, skills and experience and who were educators and problem solvers. Socrates and Plato as well as Medici and...
Michelangelo can be mentioned as examples of mentor-mentee pairs (Wright & Wright, 1987).

The use of information and communication technologies (ICT) in mentoring practices has led to changing of the classical mentoring and rising of the concept of electronic mentoring (e-mentoring) (Kahraman, 2012). Ensheret al. (2003) list the functions and roles of e-mentoring under five headings: (1) greater access, (2) reduced costs, (3) equalization of status, (4) decreased emphasis on demographics, and (5) a record of interactions.

In the literature, only e-mail is used for interaction in a considerable part of the studies (Rickard & Rickard, 2009; Shpigelman, Weiss, & Reiter, 2009; Burgstahler & Crawford, 2007; Watson, 2006) carried out with e-mentoring. However, there are some studies employing the technologies such as video conferencing (Li, Moorman, & Dyjur, 2010), electronic chat (Smith-Jentsch, Scielzo, Yarbrough, & Rosopa, 2008), and online forum (Gareis & Nussbaum-Beach, 2008) alone. In some other studies, more than one technology is used. For example; e-mail, web cam (video call) and telephone were used together by Jacobs, Doyle, and Ryan (2015) in the process of e-mentoring for the professional development of physicians. Moreover, in their study, Thompson, Jeffries, and Topping (2010) used LMS (form and online chat), e-mail and telephone. In another research (Heirdsfield, Walker, Walsh, &Wilss, 2008) conducting an e-mentoring program on adaptation of newcomers to the university, interaction was performed via web page, e-mail and telephone. In the study by Headlam-Wells, Gosland, and Craig (2006), a web site was developed in which various technologies can be used in e-mentoring. The web site features discussion areas, an online meeting environment and a messaging system. Also it has an internal e-mail system.

Today’s ICT tools offer a number of alternatives that can be used to provide top-level interaction in e-mentoring (Hamilton & Scandura, 2003; Griffiths & Miller 2005). Hence, it is expected that research on selection of ICT tools suitable for e-mentoring and the conveniences and limitations of each tool will contribute to the relevant literature. Indeed, Kahraman (2012) points out the need for studies dealing with the use of synchronous and asynchronous ICT tools in the interaction of participants in e-mentoring programs with insight into the effectiveness of these technologies.

The present study focuses on the ICT tools preferred by mentors and mentees in the case of free choice of technology during an applied e-mentoring program. It was investigated which ICT tools were opted for by participants to interact with, how long and in what ways they were used within the framework of the study, and what views the participants had about those tools. To this end, it was attempted to find out answers to the following research questions:

In the process of e-mentoring;
- What were the preferred ICT tools in first place to create common interaction areas, and what changes took place in the use of the tools during the rest of the process?
- What purposes were the ICT tools used for, and what views did the participants have regarding these tools?

**METHOD**

This research was planned as a qualitative case study. This method was preferred as it is an eligible method for in-depth investigation (McMillan, 1996) and elaborating the details (Gall, Borg & Gall, 1996). The intention of this study was to find out what ICT tools were used as a means of interaction along with the duration and purpose of using those tools throughout the e-mentoring program, and to explore in depth the study participants’ opinions regarding those technologies. It was not intended to fetch far to make a generalization from the results obtained.
Participants
The study group was selected using criterion sampling, which is one of the selection strategies under purposive sampling method, since it requires participants to meet certain criteria (Patton, 2014). In this research, the mentors were supposed to be enrolled in a graduate program related to ICT, while the mentees attended the same program at undergraduate level. In addition, the mentees were selected among those who had not taken any courses related to multimedia design before; however, the former was supposed to have taken courses in multimedia design at undergraduate level and to have successfully completed those courses. Besides, it was a requisite for the participants to interact with the researcher throughout the e-mentoring application. Bearing these criteria in mind, the participants were selected among the undergraduate students taking the 'Design and Development of Multimedia' course and graduate-level students taking the course 'Designing Interactive Content in Multimedia Learning' offered by the researcher herself. All of the students participated on a voluntary basis. As a result, 44 undergraduate students and another 8 graduate students enrolled in Computer Education and Instructional Technology (CEIT) program took part as mentees and mentors, respectively. The undergraduate students consisted of 21 females and 23 males. As for the graduate-level students, there were 3 females and 5 males.

During the study, the graduate students were in charge of e-mentoring their undergraduate peers to develop a multimedia project. Group mentoring model was used as it was necessitated for the project process. In that model, a mentor undertakes responsibility for more than one mentee (Crisp & Cruz 2009; Zachary & Fischler, 2009). Lastly, the researcher assumed the role of coordinator throughout the implementation.

Procedure
In the study, the e-mentoring program was implemented in a three-phase structure proposed by Single and Single (2005, p.310). Figure 1 displays the activities carried out during the planning, implementation, and evaluation of the program.

![Figure 1. E-Mentoring Program Phases and Activities](image)

The planning of the e-mentoring program lasted two weeks. In this period, the study group was selected first. The undergraduate students, mentees, and the graduate students, mentors, were given information about the e-mentoring program, and their expectations and recommendations were noted regarding the process. Then, the objectives were set accordingly. The objectives of the mentees were related to what kind of works, how and in what order the works would be undertaken while developing a multimedia project. On the other hand, the mentors were supposed to focus on how to coordinate a multimedia project and what qualities a good multimedia material would feature. At the end of the planning phase, the mentors and mentees were matched gradually. In the matching, initially the mentors formed groups of 3-4 people with the participants they had chosen themselves. Later, each group was asked to write a letter introducing themselves. In those letters, the members of the group included their names, contact information, their perceived strengths and weaknesses about the project development process, and their expectations from the e-mentors. The letters were given out to the mentors randomly. After examining the information about the group(s) selected by each mentor, some changes were made in the mentor-group matching. The changes were made according to an estimated extent to which the mentor could contribute, in the light of the reported talents and expectations of
the students in the group because the expectations of mentors and mentees must overlap with each other for successful mentoring (Eby & McManus, 2002). Final pairs of mentor-mentee are shown in Table 1.

Table 1. Mentor-Mentee (Group) Matching

<table>
<thead>
<tr>
<th>Mentor</th>
<th>Gender</th>
<th>Program</th>
<th>Mentee Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Male</td>
<td>PhD</td>
<td>G1 (4 mentees), G2 (3 mentees)</td>
</tr>
<tr>
<td>M2</td>
<td>Male</td>
<td>PhD</td>
<td>G3 (4 mentees)</td>
</tr>
<tr>
<td>M3</td>
<td>Male</td>
<td>PhD</td>
<td>G4 (3 mentees)</td>
</tr>
<tr>
<td>M4</td>
<td>Female</td>
<td>Master</td>
<td>G5 (3 mentees), G6 (3 mentees)</td>
</tr>
<tr>
<td>M5</td>
<td>Female</td>
<td>Master</td>
<td>G7 (3 mentees), G8 (3 mentees)</td>
</tr>
<tr>
<td>M6</td>
<td>Female</td>
<td>Master</td>
<td>G9 (4 mentees), G10 (3 mentees)</td>
</tr>
<tr>
<td>M7</td>
<td>Male</td>
<td>Master</td>
<td>G11 (4 mentees), G12 (4 mentees)</td>
</tr>
<tr>
<td>M8</td>
<td>Male</td>
<td>Master</td>
<td>G13 (3 mentees)</td>
</tr>
</tbody>
</table>

As seen in Table 1, some mentors were counselling just one group while others were in charge of counselling for two groups, which was due to the full-time or non-working status of the mentors. For example, mentors M1, M2 and M8 are employed as teaching staff at university in other cities. So, M1 preferred to work with two groups, while the others said that they could help one group only. After completion of the planning phase, e-mentoring program was launched, and it lasted for 13 weeks. During this period, multimedia project work was carried out and interaction areas were formed among the co-ordinators, mentors and mentee groups. Kuzu, Kahraman, and Odabas (2012) argue that there should be three interaction areas in the e-mentoring process as the common area, the mentor’s area and the mentee’s area. The participants were not given any information about the technologies they could use to create an area of interaction because they had sufficient knowledge and skills to use ICT. Both mentors and mentees were set free to choose and use the technology that suits their needs. Information is given in Figure 2 about the persons, their roles and the areas of interaction in the e-mentoring program carried out in the study.

Figure 2. The roles and interaction areas in the e-mentoring program

Ozdemir and Ozan (2013) point out that mentors and mentees should be given frequent feedback in the process of e-mentoring based on the idea of development and learning. In reference to this, the coordinator researcher used the WhatsApp instant messaging application for mentors and the Facebook social networking site for the mentees to communicate outside face-to-face (FtF) interactions. The preferences of the mentors and
mentees were taken into account in the selection of these tools. After the mentor-mentee matching was done, the common areas were created. The researcher, who was involved in each of these common areas whereby interaction between the mentors and groups was provided, assumed observation only and collected data without any intervention. The data obtained during and after the implementation phase were analysed during the assessment phase, revealing the results of the e-mentoring program. This phase was completed in two weeks.

**Data Collection**

During the e-mentorship program, the coordinator was present in the same setting as mentors and mentees for a long time. Time and space-independent communication became available with the help of the interaction areas created in the study, apart from FtF interaction. As a result, a friendly relationship was built based on mutual trust between the coordinator and the participants including both mentors and mentees. It is known that accurate and complete answers might be provided for the data collection tools in such environments, which in turn improves validity of the research (Streubert & Carpenter, 2011). Also data triangulation was conducted to obtain more valid and reliable data in the study. In this type of triangulation, more than one data source is employed and the data obtained are compared with each other (Creswell, 2003). The data collection tools used in the research along with the respective sub-problems to which these tools served in seeking answer is shown in Figure 3.

**Results for research question 1**

- Mentor reports
- Mentee reports (In groups)
- System logs for the common areas

**Results for research question 2**

- Mentor reports
- Researcher’s observation notes
- System logs for the common areas
- Mentee written views (Individual)

Figure 3. Data Collection Tools and Purposes of Use in the Study

Within the scope of the e-mentoring program, the multimedia project works were realized in accordance with the ADDIE design model steps. After each step, the mentee groups were asked to give a written report describing the work done at that step and to make an oral presentation about the report. In the same way, the mentors submitted a written report describing how they managed the project process after each step and made a summary presentation. The coordinator researcher also held FtF conversations with each of the mentors and mentees for an hour each week. During the conversations; the functioning of the e-mentoring process as well as the challenges and solutions were discussed. On the basis of these conversations and oral presentations, observational notes were kept by the researcher throughout the program for collecting data. In addition, system logs of each interaction area (coordinator-mentors, coordinator-mentees, mentor-mentees) created using ICT were used to this end. Moreover, opinions of the mentees were obtained in writing after the implementation. One form was completed by each respondent and the forms contained open-ended questions concerning the ICT tools used in common areas.

**Data Analysis**

Data analysis was performed with content analysis guided by the Miles – Huberman Model (Miles & Huberman, 1994). When each step of project development was complete; mentor reports, mentee reports, system logs, and observational notes were subjected to content
During the analysis, a code list was not formed at first. Instead, codes were reached in line with the concepts derived from the analysed data. The codings obtained with each of the data collection instruments were noted down separately and the results that could be applied to the same problem status were compared. The abovementioned simplification of the data was repeated periodically until completion of the data analysis process. On the contrary, analysis of the mentees’ written feedback forms was launched with starting codes. The codes were classified into three groups as sufficient, partially sufficient and insufficient ICT tools used by mentees. However, the latter was not included as a theme in results because there were found no codes associated with insufficient tools. Coding was done manually throughout the whole data analysis operation instead of employing any software developed to this end. Apart from that, the results of the analysis were tabulated, also displaying occasional quotations from reports and written forms.

**FINDINGS**

This part is devoted to the study results in order of the research questions.

**ICT Tools Used to Create Common Areas and Their Use during E-mentoring**

The study data including the mentor reports, mentee reports and system logs of the common areas were analysed separately and compared to each other. As a result, it was figured out what ICT tools were preferred by mentors and mentees for interaction and how their preferences changed during the process. The ICT tools which were used even only once were also included in evaluation. The ICTs used are presented in Table 2 below by following the steps of the project.

**Table 2. ICT Tools Used to Create Common Areas and Their Use during E-Mentoring**

<table>
<thead>
<tr>
<th>Mentor</th>
<th>Group</th>
<th>Phases of project/ Common areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Analysis</td>
</tr>
<tr>
<td>M1</td>
<td>G1</td>
<td>E-mail Social Networking</td>
</tr>
<tr>
<td>G2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2</td>
<td>G3</td>
<td>FTF Interaction E-mail Social Networking Phone conversation Instant Messaging</td>
</tr>
<tr>
<td>M3</td>
<td>G4</td>
<td>FTF Interaction E-mail Social Networking Instant Messaging</td>
</tr>
<tr>
<td>G5</td>
<td></td>
<td>FTF Interaction E-mail Social Networking Instant Messaging Online Storage LMS Teleconference</td>
</tr>
<tr>
<td>M4</td>
<td>G6</td>
<td>FTF Interaction E-mail Social Networking Instant Messaging Online Storage LMS Teleconference</td>
</tr>
</tbody>
</table>

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Table 2 shows that the common areas for interaction were created by means of 11 different tools during the first project phase, analysis namely. The variety seems to have gradually decreased in the following phases; leading to the use of 8 different tools in the design phase, 7 in development, and 6 in the implementation and evaluation phase. At the stage where the first interaction occurred between the groups and their mentors, more than one tool was seen to be involved. It was observed that each mentor made interaction with their group(s) using at least two types of ICT tools. For instance, M4 used five different tools in addition to FtF interaction. It is seen that at this stage, all of the mentors except for M8 and all of the 12 groups of mentee used e-mailing. With the use of instant messaging, 9 common areas were created and another 8 areas of interaction with social networking. It seems that social networking became the most popular tool in the design phase. The applications such as instant messaging and e-mailing seem to be the most prominent technologies at this stage. In the next stage, development, mobile messaging and social networking seem to be the most frequently used tools. At this stage, the mentors used up to three different areas of interaction. Lastly, at the implementation and evaluation stage, all of the mentors continued to use the same common areas and ICT tools as in the previous phase.

Purposes of Using ICT and Thoughts on the ICT Tools Used

The mentor reports, the researcher's observation notes, and the system records of the common areas of interaction were analysed at once. In this way, the themes were elicited regarding purposes of FtF interaction and using ICT tools throughout the e-mentoring project. It was found out that some of the mentors preferred FtF interaction, while some others did not make any interaction with their groups except via the electronic interaction areas they created using ICT throughout the e-mentoring. It seems that social networking became the most popular tool in the design phase. The applications such as instant messaging and e-mailing seem to be the most prominent technologies at this stage. In the next stage, development, mobile messaging and social networking seem to be the most frequently used tools. At this stage, the mentors used up to three different areas of interaction. Lastly, at the implementation and evaluation stage, all of the mentors continued to use the same common areas and ICT tools as in the previous phase.

M2: "We made face-to-face talks because I thought the interaction in the virtual environment would not take the place of the real life interaction."

M3: “It was important to speed up the process, coordinate the group members and ensure seriousness.”

M8: "There are many technologies that can be used for communication and interaction in the electronic environment. However, I think that it is
better to not only interact via these but also converse face to face, it would be more useful to provide a mixed interaction environment.”

Table 3 displays the purpose of using different ICT tools in the process and some mentors' opinions on the tools used.

**Table 3. Purposes of Using ICT Tools Throughout the E-Mentoring Program**

<table>
<thead>
<tr>
<th>ICT tool</th>
<th>Purpose of use</th>
<th>Sample views</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail</td>
<td>➢ First contact</td>
<td>“I contacted both groups via e-mail. Generally, reports and documents were sent.” (M6)</td>
</tr>
<tr>
<td></td>
<td>➢ Sending files</td>
<td>“I first communicated with my groups via e-mail. Greeting and first communication occurred this way.” (M7)</td>
</tr>
<tr>
<td>Social networking</td>
<td>➢ First contact</td>
<td>“We have never been disconnected thanks to both the desktop and the mobile app. Continuous interaction was provided thanks to instant notifications. It was a highly effective tool because it supports file, picture, and video sharing.” (M1)</td>
</tr>
<tr>
<td></td>
<td>➢ Giving information</td>
<td>“It proved our most effective means of communication. I created separate social networking groups for both of my groups. They could contact me easily and promptly when they had questions.” (M7)</td>
</tr>
<tr>
<td></td>
<td>➢ Coordination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Sending files</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Sharing files</td>
<td></td>
</tr>
<tr>
<td>Phone conversations</td>
<td>➢ Instant communication</td>
<td>“When group members wanted to contact me immediately, we preferred a phone call. It also provided access to students without web access.” (M3)</td>
</tr>
<tr>
<td></td>
<td>➢ Access without Internet</td>
<td>“I preferred when I needed to give feedback to the groups immediately. I told the group members that they could call me whenever they wanted.” (M8)</td>
</tr>
<tr>
<td>SMS</td>
<td>➢ Instant communication</td>
<td>“It provided access to students without web access.” (M3)</td>
</tr>
<tr>
<td></td>
<td>➢ Access without Internet</td>
<td>“Suitable for instant communication and updating.” (M4)</td>
</tr>
<tr>
<td></td>
<td>➢ Giving information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Coordination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Instant communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Sending files</td>
<td></td>
</tr>
<tr>
<td>Instant Messaging App</td>
<td>➢ Giving information</td>
<td>“It allowed easy access to all group members with one message.” (M3)</td>
</tr>
<tr>
<td></td>
<td>➢ Coordination</td>
<td>“It was the communication tool I used most effectively and efficiently. Each student was able to follow what was written in the group since they were in the group. A sufficient app also for documents, audio, video and image sharing.” (M6)</td>
</tr>
<tr>
<td></td>
<td>➢ Instant communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Sending files</td>
<td></td>
</tr>
<tr>
<td>Online Storage</td>
<td>➢ Sharing files</td>
<td>“Useful for sharing large files.” (M3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“We used for sharing the video footages of the group with me and I used it to review these footages.” (M7)</td>
</tr>
<tr>
<td>Online Docs</td>
<td>➢ Sharing files</td>
<td>“Useful for file sharing and making changes on files. It also supports cooperation.” (M4)</td>
</tr>
<tr>
<td>Blog</td>
<td>➢ First contact</td>
<td>“At first I thought of working with my groups via blog. But it was not very useful because I could not follow them quickly.” (M7)</td>
</tr>
<tr>
<td>LMS</td>
<td>➢ First contact</td>
<td>“It was useful for greeting my groups.” (M4)</td>
</tr>
<tr>
<td>Teleconference</td>
<td>➢ First contact</td>
<td></td>
</tr>
</tbody>
</table>

As can be understood from Table 3, the means of interaction between the mentors and their groups were varied. These include e-mailing, social networking, blogging, LMS and teleconferencing. Of these, blog, LMS and teleconference were not used for any other purpose in following stages. Like other ICT tools, online document was used for working on a common file; while online storage was preferred for sharing large files. The group members without internet access were accessed via phone calls and SMS by some mentors. These technologies were also preferred in order for the mentees in the group to reach their
mentors at any time they wanted. As for social networking and instant mobile messaging applications, they were seen to be used for different purposes throughout the e-mentoring program. For example, social networks were used for the purpose of first contact, giving information, coordination, file sending and file sharing. Instant messaging was preferred for giving information, sending small files, ensuring coordination, and creating instant communication and discussion environment.

As a part of the study data, the questionnaires of open-ended questions given to mentees to find out whether the ICT tools used to provide interaction in the e-mentoring process were satisfactory. Then, the questionnaire forms were analysed and summarized in Table 4.

Table 4. Opinions of Mentees On Sufficiency of ICT Tools Used for Interaction

<table>
<thead>
<tr>
<th>Sufficiency of ICT Tools Used during E-mentoring</th>
<th>Sufficient f</th>
<th>%</th>
<th>Partly sufficient f</th>
<th>%</th>
<th>No comment f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33</td>
<td>75.0</td>
<td>9</td>
<td>20.5</td>
<td>2</td>
<td>4.5</td>
</tr>
</tbody>
</table>

As shown in Table 4; 75% of the mentees find the tools of interaction in the e-mentoring process sufficient. One example is given below:

A student from G8: "The technologies we used proved sufficient for communication and interaction. We first communicated by e-mail. E-mail was very slow in communication. Later, we started communicating with Google Hangouts. There was an internet problem that originated from us. Nevertheless, our contact with Hangouts was highly productive. We had a phone call when we could not reach our consultant on Hangouts. In the report writing process, Google Docs was very useful for us. The mentor could easily identify the mistakes on the reports we had given."

It is seen that 20.5% of the mentees did not find the tools used fully sufficient. Examination of their justifications reveals that in fact some did not raise negative comments about the ICT tools used; rather, they found the use of technology insufficient just because they believed that FtF interactions or more of them were necessary. Below are given some citations about this point of view:

A student from G8: "I think all of the technologies we used to communicate with our mentor were sufficient to carry out the project. But I would rather have had more face-to-face meetings."

A student from G5: "Of course, no technology we used was as effective as face-to-face interactions. Since we couldn't manage to always talk face to face, the video conversation application helped us a lot. When something came to mind of the group members or we had an urgent thing to consult about, the WhatsApp group was used. When it was impossible to explain via typing, the mentor was called by phone. In activities covering typing (literature review, script writing, storyboard, etc.) Google Drive was used."

Some mentees reported problems due to the insufficient technical infrastructure. One of the ideas in this regard is quoted below:

A student from G6: "The technologies used were right, but we could not have a collective conversation because my group mates did not have instant messaging. At such times, I transferred our meetings with our mentor to them via other ways."
DISCUSSIONS and CONCLUSION

In this study, the participants had sufficient knowledge and experience in using ICT; so, they were not briefed on the technologies that could be used in the e-mentoring process before launching the project. No instructions or guidance were given to the participants in deciding the ICT tools to use during the e-mentoring process, and their choices were thoroughly examined.

Throughout the whole e-mentoring program, the mentors were constantly interacting with the mentee groups. This is thought to be related to the fact that the participants are good technology users. DiRenzo, Linnehan, Shao, and Rosenberg (2010) suggest that in consulting services maintained in electronic environments, those who have experience in using the internet are more likely to use the technology regularly and show continuity of communication with the other party compared to their inexperienced peers. Some of the mentors counselling for two groups first tried to use the interaction areas created with the same ICT tools to treat both groups equally. However, they were seen to switch to other technologies over time. This implies that no technology can be used in e-mentoring independently of the qualities, preferences and technology access by mentees. Landefeld (2009) indicates the importance of availability of the necessary technologies for participants in e-mentoring applications.

In the study, mentors preferred to use more than one tool while interacting with groups in the process of e-mentoring. Some of the tools offer synchronous communication while some others provide asynchronous communication. In general, it can be said that there is a tendency to use synchronous and asynchronous communication technologies together in e-mentoring applications (Smith-Jentschet al.,2008). Also in this study; as the process progressed, diversity of technology decreased making some tools the main domain of interaction while using some others in the case of immediate needs only. It could be explained with the technological facilities owned by the mentees and the activities required by particular phase of the project. Given the fact that reaching more people is one of the most important features that distinguish e-mentoring from classical mentoring (Akin & Hilbun, 2007), the choice of social networking and instant messaging may not be surprising at all. The reason for the high popularity of these two tools in this study might be their convenience for instant contact. As a matter of fact, Jacobset al., (2015) suggest that e-mentorship program participants prefer to engage in real-time communication using synchronous technologies.

Despite the lack of any imposition at all, it was found out that more than half of the mentors held FtF interactions with their groups. This means of interaction mostly took place during the first two stages of the project because the number of such meetings decreased in the subsequent stages. It seems that the mentees were satisfied with the FtF interactions. Since some mentees did not have the opportunity of FtF meeting with their mentors, this means of interaction was regarded as a handicap. Shpigelman at al. (2009) point out that the lack of FtF interactions between mentors and mentees is considered as a deficiency in the e-mentoring context. Ensher, Heun, and Blanchard (2003) refer to three types of technology use in e-mentoring: The first type only involves the use of technology (such as e-mail, web sites, chat rooms and instant messaging). In the second type, most of the interaction (more than 50%) is assumed through online tools, while the rest is done by phone conversations and FtF talks. The last type offers technology- auxiliary, which means that mentoring is predominantly realized face to face still supplemented by e-mails, instant messaging, chat-rooms, websites, and so on. As understood, e-mentoring is completely flexible in allowing FtF interactions or in what context they could be possible. It seems that what matters is to have a good analysis of the participants’ access to technology, working conditions, and their expectations.

Kahraman (2012) argues that e-mentoring applications originally started with e-mailing and although different technologies have been involved in the course of time, e-mailing still has a significant place in e-mentoring programs. Likewise, in the present study, e-mail
was taken as the first means of communication in the e-mentoring process. Later, it was mostly used for file sending not being the basic means of communication any longer. Apart from that, LMS it is widely used in e-mentoring programs in the context of Europe (Kahraman, 2012). However, it was used by only one mentor for a short period of time in this study. The other non-persistent tools referred to only on demand during the e-mentoring in this study include blogging, teleconferencing, phone calls, SMS, online storage, and online documents.

In the scope of our study, as another frequently followed means of interaction, social networking sites were used by mentors in order to make announcements, to brief mentees, to coordinate the team, to send files, to review the files and give feedback. The mentees informed their mentors about their work using the social networking and received comments by sharing products specific to each phase of the multimedia project (script, story board, raw footage, edited videos, and evaluation tools). Both mentors and mentees added their favorite Internet links to the social network, creating a discussion environment and exchanging ideas. In this respect, social networking was seen to become an area of uninterrupted interaction between the mentors and mentees. Provided that successful mentoring requires frequent and regular interaction (Bierema & Merriam, 2002), social networking proved its potential to achieve this. As was in the case of social networking sites, instant mobile messaging applications were extensively used in the e-mentoring process. In terms of purpose of use, social networking has things in common with instant messaging: Giving information, coordination, instant communication, creating a discussion environment, and sending files. As the project progressed, that tool became more popular for mentors to reach every student in the group.

The social networking sites and instant messaging applications might have been preferred by the mentors and mentees during the e-mentoring process because they are used frequently in their everyday life as well. This finding seems to be supported by Todd, Moon, and Langston (2016). In this research, the mentors and mentees were told to select and use the most appropriate ones among the various technologies offered. The results of the study reveal that the participants preferred the technologies they already had known and used before. It is also known that self-efficacy for a technology boosts the use of that technology and belief in its benefit (Guriting, Chunwen, & Ndu, 2007).

RECOMMENDATIONS

In the light of the results, the following suggestions could be brought regarding the use of ICT in the e-mentoring programs:

- To start with; rather than using only one interaction area in the e-mentoring programs, one can use more than one area created with supplementary ICT tools. Secondly, some areas of interaction may be constantly used while some others for immediate needs only, bearing in mind the objectives of the e-mentoring program, literacy and knowledge levels of mentors and mentees, and participants’ expectations and access to technology. Also, it is suggested that F2F interactions should be used as a supplement if deemed necessary, not as an alternative to the interaction areas created by ICT.

- The use of well-known technologies by mentees and mentors in the e-mentoring applications could probably affect the communication and interaction process in a desired way. Social networking sites can be used for the purposes of giving information, making announcements, sending files, and ensuring coordination. In this scope, Facebook may be preferred due to its popularity and students’ familiarity with it. As another thing, instant messaging applications could be helpful since they allow access to a large number of people instantaneously.

- If a mentor is responsible for more than one student or a group, they should not create and insistently use the same technology for each student or group. Instead, the mentors had better remember that mentees may differ from each other in technology access, capabilities and expectations, and guide ICT selection accordingly.
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REFERENCES


USING VIRTUAL MOBILITY AND DIGITAL STORYTELLING IN BLENDED LEARNING: ANALYSING STUDENTS’ EXPERIENCES

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ABSTRACT

The concept of virtual mobility is increasingly receiving attention in the literature. As one central advantage, virtual mobility enables international and intercultural experiences for non-traditional students regularly found in distance education. However, hitherto there is a lack of empirical data on the students’ experiences with virtual mobility. Moreover, adequate teaching methods and course designs have to be identified which stimulate the students’ learning motivation and learning success. This article addresses these challenges by presenting results from a joint blended learning course of two distance universities. Constructive alignment was used to implement virtual mobility and digital storytelling. The evaluation of the course demonstrates that the students generally value the opportunity for virtual mobility but likewise appreciate face-to-face contact. It also stresses the importance of suitable teaching methods and adequate course designs to spur the students’ collaboration and to achieve the intended learning outcomes.

Keywords: Virtual mobility, distance education, blended learning, digital storytelling, distance learning, constructive alignment.

INTRODUCTION

Over a long period, student mobility was treated as equal with the actual exchange of place of study. The primary goal of this exchange has been to enhance professional and intercultural competences (Harry, 1999; Messer & Wolter, 2007; Sowa, 2002). In the course of the digitalisation of university teaching, the concept of virtual mobility has brought fresh impetus to the debate revolving around new opportunities for the student exchange without changing the place of study. While several definitions of virtual mobility exist (see for an overview Tereseviciene, Margarita Volungeviciene & Dauksiene, 2011), they are all rooted in the basic idea that virtual mobility “offers access to course and study schemes in a foreign country and allows for communication activities with teachers and fellow students abroad via the information and communication technologies” (Brey, 2007). Hence, virtual mobility can play an important role in pursuing the bologna goals according to which increasing mobility is considered to be a key factor. Scholars in distance education have criticised that virtual mobility is not adequately considered given the important leverage it has to increase the mobility of students in an effective and innovative way (Schreurs, Michielsens, Verjans, & Van Petegem, 2006). Studies about best practices and pilot projects in Europe demonstrate the manifold opportunities for virtual mobility (Op de Beeck & Van Petegem, 2013; Schreurs et al., 2006; Vriens, Petegem, & Achten, 2010).

In this article, the potential of virtual mobility is acknowledged by asserting that especially non-traditional students in distance education with limited opportunities for longer periods of physical mobility can benefit from the international and intercultural experiences made possible through the latest information and communication technology (ICT). This is based
on the dominant perception in the literature, stating that virtual mobility can establish new learning opportunities by either using it alternatively or complementary to the idea of physical exchange (Otto, 2014; Schreurs et al., 2006; Wende, 1998). Complementary under this premise means the suitable integration of phases of virtual mobility in blended learning approaches. While blended learning combines face-to-face instructions with computer mediated instruction (Bonk & Graham, 2005), virtual mobility in this manner is understood as an opportunity for non-traditional students that predominantly form the target group in distance education (Jahng, Krug, & Zhang, 2007). These students are henceforth excluded from longer periods of physical exchange due to their spatial and time restrictions. In blended learning approaches, virtual mobility can serve as an opportunity for these students to collaborate with fellow students from abroad.

While exclusive usage of virtual mobility can be identified in the literature (de Kraker & Corvers, 2014), incorporating it in blended learning approaches might be of advantage as it allows physical encounter and thereby increases the commitment between the participants, thus minimizing the free rider problem (Matzat, 2013). In general terms, blended learning appears favourable as it unites the advantages of virtual and physical mobility (Matzat, 2013; Op de Beeck & Van Petegem, 2013). However, solely using innovative digital tools for virtual mobility does not guarantee convincing learning results (Op de Beeck & Van Petegem, 2013; Vriens et al., 2010). Especially if the objective is to implement virtual mobility in blended learning approaches, choosing suitable teaching methods and course designs is essential to establish a productive learning atmosphere and to achieve the intended learning outcomes (Kenney & Newcombe, 2011; Means, Toyama, Murphy, & Baki, 2013).

Despite the potential benefits that exist for the use of virtual mobility in blended learning approaches, there still is little empirical data to support this claim (Op de Beeck & Van Petegem, 2013). In this article, it is argued that a promising approach for the empirical verification is to bring in the students’ perspectives. The guiding research question therefore is how students assess their experiences with virtual mobility in blended learning approaches. Derived from this research question the assumption will be examined that the choice of a suitable teaching method and the corresponding course design plays a key role for the learning atmosphere and the learning success.

In order to test this assumption and to answer the research question, results from a joint course of two distance universities are presented that implemented virtual mobility in a blended learning approach. Based on Biggs model of constructive alignment (Biggs, 2003), digital storytelling was applied in the course design to achieve the intended learning outcomes. Digital storytelling as a project-based-learning (PL) is a constructivist teaching method and a student-centered approach (Gibbs, 1981; Robin, 2016). The main intention was that this collaborative teaching method would spur intercultural exchange and intercultural learning during the periods of virtual mobility and the face-to-face meetings.

As for the structure of the article, in the second section the courses design and the manner in which virtual mobility was integrated are described. In the third section, the methodological approach is outlined. In the fourth section, the results of the analysis are presented. This encompasses the students’ experiences with virtual mobility and digital storytelling. For section five this allows to inductively answer the initial research question and to draw some conclusions about the benefits of virtual mobility in blended learning approaches as well as the influence of the teaching method on the overall learning success.

COURSE DESIGN

Albeit the discussions about virtual mobility are in full swing, they are cohesive in their fundamental aim to facilitate intercultural and professional collaboration between students and staff based on the latest use of ICT (Tereseviciene, Volungeviciene, & Dauksiene, 2013). In order to achieve these goals, it is crucial to select a suitable teaching method and
the respective courses design. These choices should not be erratic but consistent with the intended learning outcomes.

For the course design, Biggs principles of constructive alignment were applied (Biggs, 2003). Rooted in constructivist learning theories, constructive alignment favours outcome-based teaching and learning instead of merely conveying content to the students (Biggs, 1996, 2012). Learners are perceived as the active creators of knowledge and meaning. Teachers organise and structure the teaching and learning contexts of the students acting as facilitators that guide the learners to achieve learning compatibility with their previous experiences, individual intentions, or motives. Following constructive learning principles, learners are dynamically selecting and constructing knowledge through individual and social activity (Biggs, 1996; Piaget, 1968, 1980).

Against this background, the course design and teaching method were selected to spur student collaboration and engagement, which, according to the literature, is supposed to result in higher learning success (Otto, 2017; Wang, Su, Cheung, Wong, & Kwong, 2013). The following course was offered in two distance education Master programmes which are focusing on interdisciplinary topics in environmental sciences. The curricula do not encompass opportunities for students to participate in long-term mobility programmes. The course was therefore intended to enable international and intercultural experiences for the students by combining short periods of physical exchange with longer periods of virtual collaboration. Participation should result in valuable professional and intercultural experiences. The course received full funding from the German Academic Exchange Service (DAAD), which is financed by the German Ministry of Foreign Affairs.

In total, the duration of the course was about three months. In terms of accreditation and workload, the course encompassed two five days workshops and was awarded with 5 ECTS-points equal to 150 working hours.

The objectives for the course encompassed to:

- establish a common knowledge ground by considering the previous knowledge and disciplinary background of the students
- develop and implement adequate learning methods to facilitate students learning
- design the course in a way that the intended learning outcomes are achieved

For the implementation of the course design, all these different components have to become aligned (Biggs, 1996).

<table>
<thead>
<tr>
<th>Course approach</th>
<th>Interdisciplinary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>German and Tunisian</td>
</tr>
<tr>
<td>Main learning objectives</td>
<td>Understanding climate change in an intercultural perspective</td>
</tr>
<tr>
<td>Teaching method</td>
<td>Digital storytelling</td>
</tr>
<tr>
<td>Duration</td>
<td>3 month</td>
</tr>
<tr>
<td>Format</td>
<td>Blended Learning</td>
</tr>
<tr>
<td>Credit</td>
<td>5 ECTS (150 working hours)</td>
</tr>
</tbody>
</table>

As shown in the table, the course addressed the topic of climate change, which is a key topic in the curricula of the participating universities. In terms of content, climate change can be characterized as a super wicked problem entailing complex interdependencies that
make it impossible to be addressed without massive economic and social consequences (Lazarus, 2009; Levin, Cashore, Bernstein, & Auld, 2012). Therefore climate change can be perceived as a challenge which requires an interdisciplinary approach to understand all its dimensions and the interwoven consequences (Hulme, 2009). The impacts of climate change can only be understood by adopting a global perspective that critically reflects individuals’ actions and their underlying conceptions of the world (Abbott & Wilson, 2015).

Based on the principles of constructive aliment, common learning objectives were identified that all students ought to achieve after they completed the course:

- understand climate change from an interdisciplinary perspective;
- critically reflect the own individuals’ actions towards climate change and their underlying conceptions of the world;
- analyse and communicate the problem of climate change.

For the course design, Biggs four steps for constructive alignment were applied (Biggs, 2003):

- Defining the intended learning outcomes (ILOs);
- Choosing teaching/learning activities likely to lead to the ILOs;
- Assessing students’ actual learning outcomes to see how well they match what was intended;
- Arriving at a final grade.

CASE STUDY

The course was an interdisciplinary co-operation between a German and a Tunisian distance university that brought together distance students from various academic disciplines to study a course about climate change. The students can be regarded as non-traditional because they varied in age, studied part-time, already worked, had children and some were single parents. Against the backgrounds of the students’ heterogeneity in academic, cultural and professional terms, the intended learning outcomes were that students could:

- describe and research climate change as an interdisciplinary topic;
- recognise the different cultural understandings of climate change;
- compare and contrast different lived experiences of climate change from a global perspective; and
- reflect critically on their own cultural perspective regarding climate change.

In the second step, digital storytelling was chosen as a teaching method that would obtain the intended learning outcomes. Digital storytelling is a teaching method that has emerged as a powerful teaching and learning method in the last decade (Robin, 2008; Robin & McNeil, 2012). It is a nexus of traditional storytelling combined with the use of the latest ICT. Albeit the tradition of storytelling used to convey knowledge to recipients in a meaningful and lively manner is ancient, its use in formal higher education teaching solely started in the beginning of the 1990s (Egan, 1989).

For the course, digital storytelling was considered favourable for the intended learning outcomes for the following reasons:

- Digital storytelling is a student-centered learning approach. The aim is to research and collaborate in small groups to produce a short, appealing and likewise instructive story no longer than three to five minutes. The teachers assist and act as facilitators in this process (Robin & McNeil, 2012).
- Storytelling is used in higher education to explain complex problems (Chisholm & Trent, 2013; Gubrium & Scott, 2010; Gubrium & Turner, 2011); in our case, the
wicked problem of climate change (Lazarus, 2009; Levin et al., 2012). Digital storytelling makes lived experiences coherent with academic knowledge to capture the audience’s attention. Facts are embedded into an emotional and appealing narrative.

- PL digital storytelling encourages student groups to select a climate change-related topic that merges their different disciplinary along with their academic and personal interests.
- As an instrument for deep learning, engagement and reflection (Barrett, 2016), digital storytelling emboldens the students to critically reflect their own cultural understanding of climate change.
- As the digital stories are shared, presented and discussed at the end of the course, they help the students to compare and contrast different lived experiences of climate change.

Beside the core intended learning outcomes, it was recognised the advantage that digital storytelling:

- Enhances technology competence as it teaches the practise and use of new ICT to compose and share stories (Robin, 2006).
- Can be implemented at low costs as it solely requires the possession of mobile devices with cameras, free video editing software, and computers to create and share the digital stories (Meadows, 2003).

In a nutshell, digital storytelling offers a suitable teaching method to accomplish the intended learning outcomes by researching, analysing and reflecting complex problems, collaborate in groups and practise student-centered learning based on PL, which thus encourages interdisciplinary and intercultural learning. For the course design and against the background of constructive alignment, learning activities and formative and summative assessment had to be implemented to allow students to achieve our intended learning outcomes.

Recurring to the aforementioned didactical, theoretical and methodical considerations following course design was used:

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Learning activities</th>
<th>Summative feedback</th>
<th>Assessment</th>
<th>Duration</th>
</tr>
</thead>
</table>
| **Online Preparation Phase (learning platform)** | - Introduce to others course members and tutors  
- Study the concept of the lived experience | feedback from tutors | | 1 month |
| **Workshop Phase (physical encounter in Germany)** | - Get to know each other  
- Learn how to perform digital storytelling  
- Excursion to climate projects  
- Building groups for digital storytelling project  
- Select topic  
- Develop basic concept | Providing information and guidance for composing digital story | | 5 days |
Online Implementation Phase

- Virtual collaboration
- Develop script and storyboard
collect material

Providing assistance

Written assessment of storyboard
2 months

Workshop Phase (Tunisia)

- Finalize digital story
- Excursion to climate projects
- Present and discuss digital story with others

Providing assistance
Discuss presentations and give feedback
Open debate with students on experiences with course

Oral assessment of digital story
5 days

Reflection Phase

- Writing individual reflection report about experiences with the course

Qualitative feedback on individual reflection reports

Formal assessment of digital story
2 weeks

Figure 2. Course Structure

To deepen the learning experience during the course and to critically examine their own role, all students were required to write an individual reflection report (three to five pages) at the end of the course in which they reflected on their overall experiences and learning outcomes. The use of individual reflection reports is inspired by Petranek’s concept of written debriefing, which can be understood “as an experiential activity in which participants have the opportunity to write about their experiences and feelings and those of others” (Petranek, 2000). Reminiscing about and re-enacting the various situations that occurred during the learning process can spur a deeper understanding of individual learning and help participants scrutinize self-perception in this process. In an intercultural and collaborative learning setting, this process is intensified even further by the diversity of impressions. While reflection reports lack a clear structure, teachers provide some guidance in the form of a list comprising broader categories, for instance, educational approach, intercultural experience, learning outcomes, group work dynamics or blended learning.

METHOD

The method of evaluation was intended to render the students’ experiences and perceptions about virtual mobility and the blended learning approach. Moreover, it should disclose to what extent digital storytelling was feasible to reach the intended learning outcomes and spur intercultural and professional exchange.

The content-related focus was on the individual reflection reports the students had to hand in at the end of the course. The author considers individual reflection reports to be a valuable source to delve deeper into the learning experience of the students as they allow the students to set their own personal focus and priorities. Additionally, they permit a more frank and open discussion than oral debriefing in a group or a direct communication with the tutors (Petranek, 2000). Nonetheless, it is acknowledged that the non-linear structure of the reports makes it more difficult to evaluate them than for example questionnaires. However, the deepness and profundity of the findings are worth a more multifaceted evaluation. To align and verify the students’ perceptions and that of the teachers, participatory observations of the teachers were used during the course. The author of this article was part of the group of teachers that initiated, planned and implemented the course.
Participants
The course was offered two times. In total, 46 students participated. As already described, the students can be regarded as non-traditional as they significantly varied in age, academic background. Moreover, they were studying part-time, already working, have children and some are a single parent.

Table 1. Participants of the Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Students</th>
<th>Nationality</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>First course</td>
<td>26</td>
<td>12 German</td>
<td>9 male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13 Tunisian</td>
<td>17 female</td>
</tr>
<tr>
<td>Second course</td>
<td>20</td>
<td>11 German</td>
<td>6 male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 Tunisian</td>
<td>14 female</td>
</tr>
</tbody>
</table>

Data Collection and Analysis
In terms of data evaluation, qualitative methods were applied to code and cluster the results. The qualitative evaluation was complemented by the participative observation to align students’ perception with the teachers’ impression during the course. The reflection reports were coded using Mayring’s structured qualitative content analysis (Mayring, 2000) and MAXQDA, which is qualitative and mixed methods data analysis software. Structured content analysis works with “prior formulated, theoretical derived aspects of analysis, bringing them in connection with the text” (Mayring, 2000). The first set of deductive categories was derived from the research question about the students’ perception of virtual mobility and blended learning. To render the students’ experiences with the teaching method, the broader theoretical categories of digital storytelling and related aspects were applied to carve out in which context they appeared in the reflection reports.

To secure reliability and reproducibility of the results, the first coding of the reflection reports was done by researchers who were not involved in the course. A second coding for verification and quality inspection was conducted by the author of this article. The subcategories and statements presented in the next section are results of the coding. These results were merged with the participatory observation of the teachers. The selected quotes of the students were chosen as they are representative for the results of the broader analysis.

FINDINGS
In an overall perspective, the evaluation of the reflection reports and the participatory observation disclosed that all students had positive experiences and learning success. This is supported by the fact that there were no drop-outs during the course and that all groups managed to submit a final product. Furthermore, 38 of the 46 students that participated handed in their individual reflection report.

Virtual Mobility
Non-traditional students in distance education are usually higher in age than university students and mostly work part or full-time (Carr, 2000). This might be decisive for three categories that were salient in the reflection report in terms of virtual mobility.

Technology Competence
As a first finding, the added value of the online tools provided for collaboration during the course was highlighted by the students. Likewise, using these tools appears to have significantly improved the students’ technology skills and competences. While basic skills and competences to use ICT are necessary for distance students, using new online tools like Adobe Connect, Google Docs or Colibri was indicated positively by the students. As one German student stated:

“I intensified my skill on how to divide work in a group, especially in a virtual one. The tools of Skype and Google document greatly helped with that.”
Technology competences strongly varied across the course members. While some were already familiar or experienced with most of the tools, for others Adobe Connect was a totally new experience. A student indicated in her reflection report:

"I have a lot of experience with online courses but the Kick-Off Meeting was my personal premiere for use of Adobe Connect with microphone and camera. I will profit from this experience during my further studies."

Noteworthy, if misbalances in skills and experiences in the use of ICT occurred, the students were able to cope with this in their groups by helping each other like a German student explained:

"I learned a lot – thanks to my fellow students – not only about video cutting with iMovie and Powerdirector, but also about working with Skype and Dropbox. (...) it was the first time that I really felt responsible for organising and chairing videoconferences. This was a good experience for me."

Findings from the reflection reports and the participatory observation persuasively demonstrated that collaboration was possible not only in physical meetings. As a German student exemplarily stated:

"We learned that it is possible to collaborate and create something of relevance to the world almost solely using virtual means of communication."

**Autonomy and Self-regulated Learning**

Another salient finding from the participatory observation and the reflection reports was that the blended learning approach with longer phases of virtual mobility complied with the students’ requirement to learn and collaborate autonomously and self-determined. Overall, the students appreciated the opportunity to meet and exchange with others virtually and physically. A student exemplarily said that:

"I personally find it crucial to have such possibilities where you can meet other students, get to know them and their backgrounds and motivation for – in our case – environmental sciences, but also to work together, discuss content and exchange experiences and views."

Again, this is the case for non-traditional students in distance education that need a higher flexibility because of their diverse personal circumstances. For instance, a German student described that virtual learning allowed him to make self-regulated decisions about when and where he wanted to learn:

"Virtual learning is a wonderful way for me to deal with new tasks. I’m independent of fixed learning sessions and can freely decide when and where I learn."

Virtual mobility can therefore serve as an ideal way for these students to gain international and intercultural experience. Perceived as an opportunity, it enables students to collaborate and exchange with others across boundaries such as countries and languages. Self-determined learning, on the one hand, and to collaborate with others, on the other hand, appears thus not to be contradictory but reconcilable. A Tunisian student described how her group was motivated to share ideas and experiences with each other. This yielded in improved skills and triggered mutual learning. Obviously, the use of technology facilitated this process:
“I was also motivated to talk about my experiences with other members in the group, and I enjoyed sharing ideas and learning from each other; in this sense, virtual work and the use of technology facilitated the process a lot.”

Face-to-face Interaction
Despite the fact that the experiences with virtual mobility and virtual learning were perceived as valuable, the evaluation points to the importance of physical meetings, even if only for a few days. The results of the reflection reports underpin the findings from the literature that face-to-face meetings enhance trust as well as reliability and thus minimize the free rider problem. The workshops were described as the most stimulating experience by the majority of the students. For example, a German student mentioned the encouragement of having such a workshop and its importance for long-lasting learning effects:

“The workshops were good to meet each other, build up mutual commitments and a common knowledge base. The workshops functioned as a starting point for the collaborative online learning.”

Especially for students in distance education, such courses are an opportunity to overcome the often deprecated isolation:

“To me the seminar was the absolute highlight during my studies and I would wish for any student to get the chance of doing this towards the end. It was possible to work closely with the coordinators and also to build up a personal connection, which is sometimes missed within the distance learning.”

This statement strengthens the argument that virtual mobility can complement but not entirely replace physical exchange. Although virtual mobility can generate valuable experiences, it cannot substitute face-to-face interaction, particularly if the collaboration is cross-cultural. Students’ encounter encourages a common group spirit and facilitates familiarity. However, replacing the first or second workshop with a virtual meeting to get to know each other could be considered as future options.

To deduce whether purely online seminars might have produced similar outcomes is hypothetical and can only be answered counterfactually. An online kick-off meeting could putatively have analogous effects. Notwithstanding these analogous effects, the student reflection reports indicate that the workshops constituted a salient part of the overall experience.

Teaching Method
The evaluation of the reflection reports was intended to determine to what extent the learning method, embedded in a blended learning approach, contributed to the collaboration and engagement of the students, the learning atmosphere and the learning success in terms of the intended learning outcomes.

Digital Storytelling
The overall results of the coding of the reflection reports (Table 2) disclose that implementing digital storytelling in the course design managed to develop the competences previously identified in the literature:

Table 2. Binary Coding of Broader Categories in The Reflection Reports Per Student (N38)
Technology competence (n35) was obtained through the application of ICT to collect and compose the digital story. Competence development was enhanced due to the fact that during the virtual learning, exchange of ideas and data had to be realized using digital tools and software.

Interpersonal and intercultural competence (n36) was developed through online group-based working and the presentation of the digital story to other groups. The groups indicated that during the online phase they managed to distribute the work and share responsibilities. This likewise entails acceptance of different working and communication styles during the group work. Building consensus among group members resulted in a higher acceptance of individual tasks and thus better outcomes.

Problem-solving and research competences (n38) Research competences were demonstrated as all of the groups submitted satisfying academic problems of climate change for their storyboards. In the next step, they were able to transform this climate change-related scientific topic into a digital story. Problem-solving competence was indicated by the vast majority of students as they were able to manage their individual and group-based learning pathways. For collecting the material and developing a storyboard, group coordination was compulsory. When problems arose, they had to be tackled through self-regulation in the group.

The qualitative evaluation was furthermore expected to reveal whether the alignment of learning outcomes and digital storytelling as a learning method resulted in perceived learning success of the students.

Table 3. Coding of Subcategories in The Reflection Reports Per Student (N38)

<table>
<thead>
<tr>
<th>Code System</th>
<th>Subcategory</th>
<th>Code</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology competence</td>
<td>Gain basic knowledge in mode-risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase technological competence</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase competences in video deals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learn interview technique</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal and intercultural competence</td>
<td>Meet like-minded</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collaborate with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group work was beneficial</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group work shared feelings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mutual encouragement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overcome language barriers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intercultural experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reflect non-cultural concept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem-solving and research competence</td>
<td>Understanding concept</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connection of theory and practical experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase knowledge on cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learn how to communicate cc</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recognize cc as interdisciplinary, multifaceted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The subcategories that were coded for the three broader categories in the reflection reports (Table 3) show that several skills and competences have improved during the course. Obviously, digital storytelling as PL unveiled the interdisciplinarity (n24) and interconnectedness (n11) of climate change as, in our case, a wicked problem. For example a German student mentioned:

“I have learned that the way climate change is perceived and experienced has a significant effect on lifestyle on a small scale as well as politics and mitigation on a large scale.”

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The group work was predominantly perceived a beneficial (n25) and as a chance to meet and collaborate with others. Academic knowledge about climate change was expanded by the lived experiences in both countries in the process to put the digital story into practice (n13). In the process of digital storytelling, the group members were encouraged to choose a climate change related topic and to reconcile their different disciplinary as well as their academic backgrounds and personal interests.

This process also strengthened soft-skills, cope with language (n14) and intercultural barriers and triggered to reflect the own cultural concept (n13). As a German student expressed:

“For me, learning that apart from the academic and scientific way of analysing and depicting the climate change there is a concept that involves and researches non-academic experiences, opinions and views was learning a whole new perspective.”

In a nutshell, digital storytelling for the case of climate change served as an instrument for deep learning, engagement and reflection.

CONCLUSION

Virtual mobility in blended learning can be a valuable learning experience for non-traditional students in distance education. The results presented also corroborate the assumption that a stimulating teaching method, embedded in a suitable course design, is crucial for the learning success of the students.

Notwithstanding that pure virtual mobility can be a valuable experience in itself; the results of the evaluation indicate that a mixture in the form of blended learning appears to be the preferable choice for non-traditional students in distance education. According to this understanding, virtual mobility is then used complementary and not as a compensation for physical exchange. Non-traditional students for which typical exchange programmes are predominantly incompatible can thus benefit from a combination of short physical and longer periods of virtual exchange. As elucidated, while one physical encounter might potentially be sufficient, this should not lead to the assumption that physical encounter in general is superfluous.

Another key finding from the analysis is the importance of a careful alignment of teaching method and course design for virtual mobility in blended learning approaches. The results of the evaluation disclose that amalgamating the different components can elicit the students learning success and ameliorate their intercultural and professional skills and competences. Increased technology competences appear to be one major outcome as a result of the successful implementation of virtual mobility.

As constructive alignment advises, preferences for teaching method and course design must be intentional, not arbitrary. Intended learning outcomes have to be aligned with course design and the teaching method. In the case presented, constructive alignment demonstrated to be a promising concept. As a salient observation, students’ self-regulation instead of teacher-centred approaches in digital storytelling proved to be extremely advantageous for intercultural experiences. Careful mediation by teachers to facilitate the learning process is nonetheless strongly recommended. Despite the fact that digital storytelling was consistent with the learning outcomes about climate change, it might be incongruous in other educational contexts. In this regard, more research is needed.
To sum up, virtual mobility in blended learning that takes advantage of both, physical and virtual exchange appears to be a practical way for distance education. This amalgamation can empower a broad range of non-traditional students in distance but also in conventional universities to benefit from the internationalisation of university teaching. For the solidification and generalisation of these inductive findings, more case studies are needed to harden the empirical ground.

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FINANCIAL ROLES AND ITS EFFECT ON PERSISTENCE OF FEMALE STUDENTS IN DISTANCE EDUCATION PROGRAMS IN GHANA

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ABSTRACT

In recent times when there has been a shift in public benefit of education from the higher education to basic education, beneficiaries of higher education take responsibilities of most of their financial commitments as students. The focus of the study was to find out the extent to which financial responsibilities affect the persistence of female students accessing higher education through the distance education programs. A correlational research design was used to describe and predict the effect of financial responsibilities on persistence of 441 female students drawn from selected public universities in Ghana. Data was collected using questionnaires and analyzed with descriptives and simple linear regression. It was found that financial roles had positive effect on persistence of the female students. The study recommended that female students were exposed to the sources of funding to enable them mitigate the effect financial roles might have on their persistence and academic progression.

Keywords: Financial roles, distance education, persistence, academic progression, female students.

INTRODUCTION

The interplay of economic and cultural factors may have the potential in determining the level of students’ persistence in a college (Burrus et al., 2013). In support, Goldrick-Rab (2016) also asserted that a student’s financial responsibilities can be one of the important predictors of persistence towards degree attainment as these directly affect the provision of resources at home and indirectly affect supply of the needed social investments necessary to succeed in college. In the view of Nordenmark (2004), one’s control over financial responsibilities can create a feeling of contentment as they provide an individual with a greater meaning to life and more control over other equally important life situations. In concurring to this assertion, findings from a study conducted by Bynum (2016) showed a
positive relationship between financial status and persistence among female college students. Carney-Crompton and Tan (2002) added that some variables that determine the persistence of both male and female students include household income, the number of dependents, and the financial aid received by the student. The current study looked at financial responsibilities in terms of number of dependents, ability to pay fees and accessibility to financial support in an attempt to examine how female students feel the blunt if decisions have to be made in relation to how to continue with schooling through the distance education mode in Ghana.

PURPOSE OF THE STUDY

This study investigated the effect of financial roles on persistence of female students in distance education programs in Ghana. This was deemed necessary due to the background characteristics of the female students who accessed higher education by distance learning as being self-dependent and also the fact that economic factor may have a direct relationship with the persistence of students on distance education programs. It was also the belief that the finding of the study might be beneficial to the female student and to the administrators of institutions of distance education. The study was guided by a null hypothesis as stated below;

- \(H_0: \) Financial responsibilities are not statistically significant predictor of persistence of female students in distance education programs in Ghana.

LITERATURE REVIEW

Student attrition theory by Bean and Metzner’s (1985) was used to support the study. This theory was developed in relation to organizational turnover and attitude-behavior interactions theories (Al-Dossary, 2008). Bean and Metzner (1985) stressed that student decisions to leave colleges were related to peoples’ decisions to leave their places of work. Bean and Metzner (1985) claimed that the student persistence/retention theories developed by Spady, Tinto and Pascarella were very much skewed on socialization of students in institutions and did not take into consideration the external factors which were likely to affect non-traditional students. This is due to the fact these non-traditional students had fewer chances of experiencing social integration opportunities provided by institutions as seen among students who patronize distance education institutions. Most of these students are non-residents and do not benefit much from most of the efforts made by colleges for socially integrating students into the academic environment (Bean & Metzner, 1985). Bean and Metzner (1985) therefore found that environmental variables were more important for non-traditional students than academic variables.

According to Bean and Metzner (1985), the four sets of variables that influenced student persistence student’s grade point average, intention of the student to leave, background and defining variables of students and environmental variables such as finances, hours of employment, family responsibilities and opportunity to transfer. The authors opined that all these variables are external to institutions but have a direct effect on dropout decisions of non-traditional students like those accessing education through the distance education mode. They reiterated that when academic variables of non-traditional students were good but they faced poor environmental variables, they were likely to leave school (Bean & Metzner, 1985). On the other hand, students were most likely to remain enrolled when environmental variables were excellent and academic variables were poor because low scores on the academic variables were usually compensated for by good environmental support (Bean & Metzner, 1985).
In a research involving 50 institutions in the United States, Westrick and Robbins (2012) found that the effect of financial responsibilities on persistence has a relationship with a student's first year Grade Point Average. This implied that financial responsibilities may have contributed immensely towards the academic performance and persistence of students in the study. A related study by Abdu-Raheem (2015) on financial background as a predictor of academic performance among secondary school students in Nigeria, Abdu-Raheem reported that there was relationship between parents’ financial background and academic performance of the respondents. The study stressed the need for the formulation of good programs or policies aimed at creating an academic balance between students from rich and the poor backgrounds. Though Paulsen and St. John's (2002) comprehensive studies of financial responsibilities and higher education showed a relationship between financial responsibilities and persistence, the researchers indicated that there were several other significant interactional effects. For instance, the study reported that women from low-income and single-parent families were less likely to persist than men because the attraction to leave school in order to seek employment opportunities was usually high (Paulsen & St. John, 2002).

Reay (2003) also conducted a qualitative study in United Kingdom among 12 working-class women who were attending higher education and found that the women especially those with children, were held between the need to earn money, meet domestic responsibilities and wanting to study. Reay further indicated that the women's narratives showed evidence of risks and costs involved as they made effort to participate in higher education. The study reported a severe financial hardship experienced by single mothers who were managing paid work with studies (Reay, 2003). Such financial difficulties usually exposed single women with low financial background to the risk of dropping out of university particularly when they experience the extra cost incurred by educating their children (Reay, 2003). This implication is that single mothers who are female students are more likely to have problems with persistence as compared to their married counterparts.

Distance education in most institutions in Ghana offer a face-to-face option as a support service to students (Simpson, 2016). This however, creates an additional financial burden to these students as they need to commute to the designated study centers to access this facility. As noted by Goldrick-Rab (2010), distance education is a popular choice among lower income students and financial support is associated with the level of persistence of most of such students. Another study by Terriquez and Gurantz (2015) investigated how financial factors contribute to straining the upward educational mobility experienced by a cohort of young adults. Using telephone survey and in-depth interview, the researchers gathered data from 18 to 26 year olds to analyze their decisions for leaving college with intentions to return or patterns of stopping out (Terriquez & Gurantz, 2015). It was found that financial considerations which played a key role in shaping the persistence decisions of the respondents included accessibility to a financial aid, attending to family financial obligations, ability to pay for housing expenses and rising tuition rates (Terriquez & Gurantz, 2015).

A study by Mamiseishvili and Deggs (2013) also investigated how demographic characteristics, environmental factors and personal goals of low-income students affected their persistence to degree completion. The study aimed at examining persistence outcomes over a 3-year period across the national sample of students from low financial backgrounds at public institutions using a multinomial logistic regression analysis. The study revealed that different sets of factors predicted persistence and transfer for low-income students in the study. The researchers recommended that identifying these factors will help administrators to better serve the needs of their students (Mamiseishvili & Deggs, 2013). As proposed by the researchers in the above study, having information on the characteristics of students...
who patronize an institution will go a long way to help administrators as they formulate policies and interventions to assist students. It was the aim of the current study to produce information on female students to serve as a basis for decision making among administrators in distance education institutions.

In relation to the foregoing, Adu-Yeboah (2011) conducted a study among mature female students in one public university in Ghana using a qualitative approach. The aim of the study was to explore the experiences of these mature female students and also find out the strategies they adopted to navigate through higher education as they juggle with other duties. The study revealed that the female students adopted personalized strategies to enable them to progress through their education. Adu-Yeboah (2011) concluded that the economic backgrounds, marital status and family lives were some of the major factors that influenced the way women students experience higher education in Ghana.

Contributing to the discussions above, Renehan (2015) had commented that attending college in the past decade has transformed from being an intellectual pursuit to a financially burdensome risk for most students and their families. It has, therefore, become very essential for students to have some form of financial aid or parental support in order to attend and complete college (Renehan, 2015). Highlighting on women in college, the American Association of University Women (AAUW, 2016) reported that many female students tend to access student loans than men and also take longer period in repaying these loans. Currently, over 40% of women in American households are the primary breadwinners with children, with single mothers accounting for almost two thirds of this number (Finningan, 2015).

In most societies, women’s major roles were narrowed to homemaking and child nurturing. This constrained their aspirations and accessibility to higher education and professional occupations so much so that when women started pursuing work, most employers thought they were seeking temporary jobs in order to supplement family income (Saleh, Yu, Leslie & Seydel, 2017). With such belief, low salaries were offered to women compared to men who possessed the same level of education and doing the same job (Saleh, et al., 2017). For instance, Kitroeff and Rodkin (2015) revealed that women with MBA certificates earned an average of $35,000 less than the men even after eight years of graduation and the women took a year longer in repaying their student loans. Additionally, Kitroeff and Rodkin (2015) found that student loans took 25% of women earnings compared to 14% of the men’s earnings.

In the situation where the cost of attending higher education has increased close to 300% over past two decades, it becomes imperative that as one discusses persistence, a student’s ability to pay for a university education must also be considered (Bean, 2005; Burrus et al., 2013). Such situations usually compel some students to seek loans and other financial aids in order to support themselves and care for their families as well. Saleh et al. (2017) however, found that one of the major concerns about “student loans is the ability to repay them, and this has been an issue of importance to all college students, especially to female students” (p. 228). The focus of this study therefore was to find out how the financial responsibilities of these female students affected their persistence as students in distance education programs.

**METHODOLOGY**

The correlational research design was used to predict the effect of financial roles on the persistence of female students. This design was deemed appropriate for the study as it allowed for the determination of the relationship as well as prediction to be made between
the variables under study (Creswell 2014). It also allowed for the use of collecting, analyzing and presenting data quantitatively as used in this study (Creswell 2014). With the correlational research design, the relationships as well as the effect of financial roles on persistence of female students in distance education design would be established.

Participants of the Study
The participants of the study were selected from a target population of 7849 female students pursuing education in two public universities in Ghana. Using the Yamane's formula for sample selection, a sample of 441 female students was selected from. The participants were then selected through a stratified random sampling from 21 study centers from two public universities in Ghana by the proportionate method. The study centers were selected using an inclusion criterion of having 90 and above female students. This criterion was necessary to enable the result obtained to be subjected to an inferential statistic.

Data Collection and Analysis Procedures
The questionnaire used for collecting data had two sections. The first part looked at the demographic data (age, marital status and number of dependents) while the second part dealt with the variables under study (financial roles and persistence). These were measured on a continuous nature. Then items for persistence were modified from Davidson, Hall and Milligan's (2009) College Persistence Questionnaire. Out the sample of 441, 377 of the questionnaire returned were valid for analysis of results. Responses were analyzed with the help of means, standard deviation and simple regression analysis using a five point Likert scale (1-strongly disagree to 5-strongly agree). The means of the responses were used to describe the extent to which the respondents agreed or otherwise with the statements under discussion. To facilitate data analysis, the means of the responses were interpreted as follows: 3.41 - 5.00 (Agree), 2.61 - 3.40 (Moderately Agree) and 1.00 - 2.60 (Disagree).

FINDINGS AND DISCUSSIONS
Profile of Respondents
The age ranges of the study participants were found to be as follows; those aged between 18-25 years were 155(41%); 25-35 years were 193(51%); 36-45 years were 22(6%) while participants aged above 46 were 7 (2%). The age range with the highest number of participants was 25-35 (51%). Participants of were found to fall within 3 main categories namely; single 235(62%), married 138 (37) divorced and widowed 4(1). This implied that the majority of the female students were single. The study further sought to find out if the respondents had dependents they were supporting. It was revealed that 222(52%) of the respondents had children were supporting, 141(32%) and 67 (16%) cared for their parents and siblings respectively. Table 1 presents in the descriptive analysis of responses of the female students in relation to their financial responsibilities.
### Table 1. Financial Responsibilities as Viewed by Female Students

<table>
<thead>
<tr>
<th>Financial Responsibilities</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial needs of children</td>
<td>3.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Financial needs relatives.</td>
<td>3.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Inability to meet academic needs.</td>
<td>3.6</td>
<td>1.3</td>
</tr>
<tr>
<td>Families pay fees.</td>
<td>2.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Not responsible for paying fees.</td>
<td>2.5</td>
<td>1.3</td>
</tr>
<tr>
<td>Access Students’ Loan Fund.</td>
<td>2.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Support from employers.</td>
<td>2.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Loans from banks</td>
<td>3.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Engage in more than one job</td>
<td>3.7</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Average Score</strong></td>
<td>3.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

As shown in Table 1, provision of the needs of children and relatives were highly scored with mean values of 3.8(SD=1.3) and 3.5(SD=1.2) respectively by the respondents. This meant that the needs of close relations were of priority to the female students despite the fact that they had some academic needs to attend to as well. This finding is in support of the study by Reay (2003) who found that females, especially those who had children, were held usually between the need to meet domestic responsibilities and desire to study. Sha’aban as cited in McClusky (2017) also opined that it was the role of families to cooperate when it comes to the maintenance of the economic welfare of the family as depicted among the female students in this study. As complemented by Riel (2011), individuals are most likely to lose personal honor and dignity if they do not provide the needs of the family.

It can also be observed from Table 1 that respondents agreed (Mean=3.6, SD=1.3) to the statement that they faced problems in trying to raise enough funds for their academic needs. This finding confirmed a survey conducted by the Higher Education Research Institute in 2002 in the United States which found that 65.3% of the freshmen have either “some concern” or “major concerns” about not having enough money to complete their college degrees (Nonis & Hudson, 2006, p. 151). Despite this handicap, the respondents disagreed (Mean=2.9, SD=1.7) with the statement that their families supported them in paying for the cost of their academic bills.

The study went further to find out if the female students have access to Students Loan Fund or get financial support from their places of work. The results as seen from Table 1 show that the respondents were in disagreement (Mean=2.5, SD=1.4) of this statement. The meaning was that respondents claimed that they did not receive any form of financial help from the Student Loan Fund. The picture as seen here is in line with the study conducted in Uganda by Jansson, Bukuluki, Hojer (2017) which found most female students regardless of their background were more dependent upon private or self-sponsorship in paying for their academic bills in higher institutions as compared with male students who accessed public sponsorship to a greater degree. Terriquez and Gurantz (2015) noted in their study among young adults that accessibility to financial aid played a key role in shaping the persistence decisions of the respondents. The results as displayed in Table 1 showed that most of the
respondents claimed that they did not get any financial support from the families, Students Loan Fund or their employers. So the question was how were they able to meet their financial needs as students on distance education program? This question was reliably answered when the respondents agreed (Mean=3.7, SD=1.3) that they engaged in other businesses and jobs to raise some income to support themselves. This confirms the findings by Adu-Yeboah (2011) which found that most female students adopt personalized strategies to help them progress successfully through their education.

In addition to the above descriptive analysis, the study also tried to determine the extent to which financial responsibilities affect the persistence of female student in distance education program. In attempt to respond to this, a null hypothesis was derived as indicated below:

- **H01**: Financial responsibilities are not a statistically significant predictor of persistence of female students in distance education programs in Ghana.

The scores on financial responsibilities and persistence were both computed individually and a continuous score was obtained for each of the variables and used to conduct a significance testing between the variables. The simple linear regression analysis was applied to test the effect of female students’ financial responsibilities on their persistence in distance education programs. The variant of the independent variable was placed in the model to determine the coefficient of determination (R²) and used to explain the amount of variability explained in the dependent variable (persistence) by the independent variable (financial responsibilities). The effect size was also determined using the R². The R indicated the relationship between the independent and the dependent variable, while the results from the ANOVA further established the strength of the significance of the relationship between the variables understudy. The results as obtained from the simple linear regression are presented in Table 2.

### Table 2. Simple Regression Analysis of Financial Responsibilities and Persistence of Female Students

| Simple R | .220 |
| R Square | .049 |
| P-value | .000 |

<table>
<thead>
<tr>
<th>ANOVA</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance</th>
</tr>
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<tbody>
<tr>
<td>Regression</td>
<td>827.969</td>
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<td>827.969</td>
<td>19.133</td>
<td>.000</td>
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<tr>
<td>Residual</td>
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<td>375</td>
<td>43.274</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>17055.830</td>
<td>376</td>
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</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>28.350</td>
<td>1.562</td>
<td>18.147</td>
</tr>
<tr>
<td>Financial Resp.</td>
<td>.230</td>
<td>.053</td>
<td>4.374</td>
</tr>
</tbody>
</table>

**NOTE: p < .001**

Table 2 depicts the results of the simple regression of financial responsibilities as a predictor variable and persistence as the dependent variable. It can be observed from Table 2 that, R at .220 with a p-value of .001, implied there was a weak positive correlation or relationship between the predictor variable and the dependent variable. This result indicates that as financial responsibilities of female students increased their level of persistence also increased as well. The R-Square (R²) as portrayed in Table 2 indicated the proportion of the
variance in the dependent variable which can be explained or predicted by the independent variable. As clearly seen in Table 2, the value for R-Square (R²) was .049. This implied that financial responsibilities explained close to 5% variance in persistence (multiplying .049 by 100). It also meant that about 95% of the variance not explained can be as a result of other factors. The R-Square (R²) also showed the effect size of .049. Applying Cohen’s (1994) standard on interpretation of effect size where, r = .10 (small effect), r =.30 (medium effect) and r =.50 (large effect), an effect size of .049 is an indication that financial responsibilities had a small but significant effect on persistence of female students on distance education programs.

To further confirm how significant the relationship between financial responsibilities and persistence can be used to predict an outcome, a report on the analysis of variance (ANOVA) showing the sums of squares, the degree of freedom associated with each sum and the F-ratio are reported in Table 1.2. As it can be noted, the F (1, 376)=19.133 which was significant at p < .001, meant that the regression model can be used to significantly predict the extent to which financial responsibilities affected persistence. In other words, at an effect size of .049, financial responsibilities was a predictor of the level of persistence among female students on distance education programs. Based on this result, the null hypothesis which indicated that financial responsibilities are not statistically significant predictor of persistence of female students in distance education programs in Ghana was rejected. It was therefore concluded that financial responsibilities can positively determine the persistence of female students.

The study went further to find out the model parameters (beta values) and the significance of these values to the regression model by looking at the coefficients of the predictor and the outcome variables using regression equation, Y= α +βx₁+ ε, where Y is the predicted value of Persistence, α= the predicted value of Persistence if x₁ is zero, β = effect in Persistence due to a unit of change in x₁, x₁= independent variable (financial responsibilities) and ε = other factors that influence Persistence but not observed. From Table 1.2, one can notice that the “Constant”, which implied that the predicted value of persistence if financial responsibilities is zero is 28.350. The regression weight (Beta) that indicates the amount of change in the outcome (persistence) associated with a unit change in the predictor (financial responsibilities) is .230. With the guarantee that the model has some ability to predict persistence of female students, the regression model was refined by replacing the beta values with the coefficients in the regression equation seen as below:

 Persistent = α + β (financial responsibilities). Substituting the coefficient the equation is seen as Persistence = 28.350 + .230. Then multiplying the equation a unit of financial responsibilities to the results as: Persistence = 28.350 + .230 (1), and therefore Persistence = 28.580.

This meant at .230 (β =.230), a unit (1) increase in financial responsibilities, persistence was expected to yield a persistence of 28.580. With p-value of .001, it can be mentioned that there was a statistical significant effect of financial responsibilities on persistence of female students.

The foregoing results implied that an increase in the financial responsibilities of the female students would increase their level of persistence as seen in the regression model. In a reverse manner, a decrease in the financial responsibilities of the female students may lead to a decrease in their agility to be persistent on the course of study. The findings as established is in line with the study by Paulsen and St. John’s (2002) which found that there was an association between financial responsibilities and persistence in higher education, but as revealed in this current study, Paulsen and St. John also had indicated the presence of
several other significant interactional factors. Again, comments by Goldrick-Rab (2016) had indicated that though students may experience financial roles differently, financial concerns can exert serious impact on students’ access to college and persistence towards attainment of degrees. As it can be noted in this study, participants had confirmed they experienced some financial difficulties but in contrast with the assertion made by Goldrick-Rab (2016), they seem determined to go against the odds to persist on their program.

The finding from the simple regression analysis also supports the study by Nielson (2015) which found that the women perceived their persistence in higher education in terms of job-seeking opportunity and channel for self-development. As reiterated by Nielson (2015), majority of the participants confirmed that their persistence was based on the belief that attaining a higher degree would help to break down structural barriers towards getting better jobs as most of the participants were in low-wage jobs and insecure occupations. This assertion was confirmed by the results of this study. The finding on financial responsibilities seemed to disagree with assertion made by Khattak (2013) that most women who participated and succeeded in higher education were from the elite and the upper middle classes who financially advantaged. The results from this study indicated that the respondents had financial difficulties but they showed the urge to succeed on their study against the odds.

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that though other factors may play a role in determining the persistence of female students, the result from the study has established that financial responsibilities can positively affect the persistence of female students on distance education programs in Ghana. It was therefore recommended that;

- Administrators and managers of distance education institutions should ensure that they restructure modes of paying fees that allow students the chance to pay fees by smaller instalments over the period of their study. This is important due to the fact that most students who have lower earning, have a low tendency of saving large amount of money over a longer period of time.
- The use of mobile money accounts for easy transfer of smaller amounts of money conveniently would be recommendable.
- Female students must be educated on policies of students’ loan funds available for access in order to create awareness while distance education institutions and non-governmental organizations may also establish scholarship schemes to support best female students.

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REFERENCES


INVESTIGATING VIDEO VIEWING BEHAVIORS OF STUDENTS WITH DIFFERENT LEARNING APPROACHES USING VIDEO ANALYTICS

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ABSTRACT

The deep and surface learning approaches are closely related to the students' interaction with learning content and learning outcomes. While students with a surface approach have a tendency to acquire knowledge without questioning and to try to pass courses with minimum effort, students with a deep learning approach tend to use more skills such as problem-solving, questioning, and research. Studies show that learning approaches of students can change depending on subject, task and time. Therefore, it is important to identify students with a surface learning approach in online learning environments and to plan interventions that encourage them to use deep learning approaches. In this study, video viewing behaviors of students with deep and surface learning approaches are analyzed using video analytics. Video viewing patterns of students with different learning approaches are also compared. For this purpose, students (N=31) are asked to study a 10-minutes-long video material related to Computer Hardware course. Video interactions in this process were also recorded using video player developed by the authors. At the end of the lab session, students were asked to fill in the Learning Approach Scale by taking into account their learning approaches to the course. As a result of the study, it was observed that the students with surface approach made a statistically significant forward seek over to the students used deep learning approach while watching the video. Moreover, an investigation on the time series graphs of two groups revealed that surface learners watched the video more linearly and had fewer interactions with it. These interaction data can be modeled with machine learning techniques to predict students with surface approach and can be used to identify design problems in video materials.

Keywords: Video analytics, educational data mining, learning approach, video learning learning analytics.

INTRODUCTION

The use of video-based learning materials in online learning environments is becoming increasingly across the globe. At the same time, studies showed that students spend more time on video materials than text materials (Seaton, Bergner, Chuang, Mitros, & Pritchard, 2014). One of the key advantages that video-based materials provide is that they contain interactive elements which appeal to both visual and auditory senses. Besides, it allows the students to progress in learning at their own pace and review the sections they want, which can be addressed as other notable advantages (Kim et al, 2014). Despite the benefits and widely use of educational video materials, there is a limited number of studies conducted on the basis of data to investigate the video viewing behavior of students. This
limited-scale research, however, shows that data-driven approaches can provide important information about video-based learning (Kim et al, 2014; PI, Hong, & Yang, 2017; Schiltz, 2015).

In this study, video viewing behaviors of students are discussed in terms of their learning approaches. The difference between the video viewing behaviors of the students with different learning approaches is also analyzed and the correlation between the video metrics and the learning approach scores of the students is examined. At the same time, the video viewing data of deep and surface learning approaches are visualized in a time series graph with an aim to visually compare the video viewing behaviors of the two groups.

**Learning Approaches**

Learning approaches were first introduced by Marton and Saljo (1976) in 1976. The researchers observed that, in reading-related tasks, some students focus on memorizing the texts to answer the questions while others study towards understanding the underlying meaning of the texts (Marton & Saljo, 1976a, 1976b). Based on this, they inferred that students use either surface or deep learning strategies while carrying out a learning task. The conducted studies point to the fact that surface learning is correlated with low-quality learning outcomes while deep learning is associated with high-quality learning outcomes (Rajaratnam, D'cruz, & Chandrasekhar, 2013). Therefore, in online learning environments, it is crucial that the students who follow the surface approach are identified in time and intervened to ensure that they adopt the deep learning strategies (Ak, 2008).

**Video Analytics**

Numerous studies are conducted on the collection and analysis of students' interaction data related to their learning processes. The general purpose of these researches, which falls under learning analytics, is to seek solutions to educational problems by analyzing the traces that left behind by students in their learning processes (Chatti, Dyckhoff, Schroeder, & Thüs, 2012). Video analytics can be regarded as a sub-field of learning analytics. The purpose here is to perform data-driven analyses regarding video-based learning by analyzing the students' clickstreams on those videos.

In literature, a limited number of studies can be found where the video viewing behaviors of students are analyzed. The results obtained from these studies, however, revealed valuable information about video-based learning and designing educational videos. For example, a study conducted on edX platform by Guo, Kim, and Rubin (2014) revealed that students' interactions have decreased significantly in videos that are longer than 6 minutes. Another study carried out by Kim et al (2014) compared the students' video viewing behaviors in lecture and tutorial videos. This study found that the students watched the course videos more linearly while seeking more frequently in the training videos. Moreover, they have found that there is a frequent replay, especially where an important issue or theory is explained, or where there are screen changes. Based on this result, researchers have indicated that in tutorial videos, the learners often need to replay, therefore putting markers at that points will help their learning.

Chen and Wu (2015) studied how three different video materials (voice-over presentation, picture-in-picture and lecture recording in class) changes in accordance with the cognitive differences and learning styles of the students. The researchers analyzed the students with visual and verbal styles in terms of sustained-attention, cognitive load, emotion and learning performance. The researchers reached the conclusion that all three video types enhanced the learning performance, but the picture-in-picture and lecture recording methods proved more effective compared to voice-over presentation. They concluded that, while visual and verbal learners performed similarly in all three video types, sustained attention and cognitive load values of the students were higher in the video that was prepared using the voice-over presentation method.

Guo et al. (2014) investigated the impact of different video types on students' interaction with the video by the help video analytics. In the study, data from large number of students
were analyzed, the researchers concluded that students showed greater interest in short videos. They further concluded that the talking-head videos produced in an informal manner generated more interactions than the high-quality professional training videos. Kleftodimos and Evangelidis (2016) grouped the video-viewing data of students using cluster analysis. By doing this, they aimed to determine different student profiles. The researchers asserted that those profiles could be used in identifying the students who experience problems with the videos that are viewed particularly for the purpose to carry out a specific task.

From the above-mentioned studies, it is clear that video analytics can be helped to obtain crucial information regarding the effectiveness and design of video courses. None of the studies has compared the video viewing behaviors of learners with deep and surface learning approaches. Therefore, in this study, the video viewing behaviors of deep and surface learners are aimed to be compared to overcome the following research questions:

- Is there a statistically significant difference between the video metrics of deep and surface learners (play, pause, seek, etc.)?
- Is there a correlation between deep and surface approach scores and video metrics?
- What similarities and differences exist between the time series graphs that visualize the video viewing behaviors of deep and surface learners?

**METHOD**

The research was carried out in the Computer Education and Instructional Technology department at a state university in Turkey with undergraduate students (N = 31). The data were collected from Computer Hardware course offered by the department. As a video material, a 10-minute-long video about the Hard Disk Drive (HDD) topic was designed for the experiment. Students are asked to study during the course period on this video that they have not seen before. The interactions of the students while watching the video were recorded using a video player developed by the researchers. At the end of the session, students were asked to fill Biggs’ The Revised Two-Factor Study Process Questionnaire (R-SPQ-2F). Questionnaire data and interaction data were joined based on students’ ID in Moodle. Thus, in the process of data analysis, personal data anonymization technique was applied.

**Study Process Questionnaire**

The Two-Factor Study Process Questionnaire (R-SPQ-2F), which was developed by Biggs (J. B. Biggs, 1987a, 1987b) and revised in 2001 by J. Biggs, Kember, and Leung (2001), was used in order to evaluate course-oriented learning strategies of students. The Turkish adaptation of the scale's current version was made by Onder and Besoluk (2010). The final version of the scale contains 20 learning-related items, 10 of which were on surface learning and the remaining 10 were on deep learning. In turn, each factor contains in itself the motivation and strategy sub-dimensions, each consisting of five items. In other words, the final version of the scale consists of four sub-dimensions namely, Deep Motivation (DM), Deep Strategy (DS), Surface Motivation (SM), and Surface Strategy (SS); and two factors, Deep Approach (DA) and Surface Approach (SA) (J. Biggs et al., 2001). While the scale scores obtained for each sub-dimension can vary between 5 and 25, the scores that can be obtained regarding the deep and surface approaches vary between 10 and 50.

**Video Interaction Data**

Video interaction data collected by the video player developed by the authors (Bayazıt & Akcapinar, 2018). This video player was integrated into the Moodle Learning Management System (LMS). Thus it enables the students’ video viewing data to be recorded by linking them to the user IDs on the Moodle platform. Each interaction made by students on video player has recorded in the database as a row. These records contain student ID, session ID, date-time, type of interaction (pause, play, seek, etc.) and descriptions of action. When the
session is done, hundreds of rows of the records are created for each student. A pre-processing tool has also been developed so that these data can be used for analysis. This tool removes duplicate and incorrect records of the student interactions and generates features for further analysis. These features and their descriptions are provided in Table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Interaction</td>
<td>The number of total interactions on the video player</td>
</tr>
<tr>
<td>2</td>
<td>Duration</td>
<td>Total video viewing duration</td>
</tr>
<tr>
<td>3</td>
<td>Video Page Visit</td>
<td>Total number of video page visit</td>
</tr>
<tr>
<td>4</td>
<td>Video Playing</td>
<td>The number of times the play button on the video player is clicked</td>
</tr>
<tr>
<td>5</td>
<td>Video Pausing</td>
<td>The number of times the pause button on the video player is clicked</td>
</tr>
<tr>
<td>6</td>
<td>Video Completion</td>
<td>The number of times the video is completed</td>
</tr>
<tr>
<td>7</td>
<td>Video Seeking</td>
<td>The number of clicks on the time-line for seeking purposes</td>
</tr>
<tr>
<td>8</td>
<td>Forward Seeking</td>
<td>The total number of forward seeking</td>
</tr>
<tr>
<td>9</td>
<td>Backward Seeking</td>
<td>The total number of backward seeking</td>
</tr>
</tbody>
</table>

The 40-minutes session consisting of 31 students resulted 1793 records regarding the student interactions in the database.

**Data Analysis**

Study Process Questionnaire generates scores between 10 and 50 using the sum of each learning approach in accordance with its sub-scales. Different approaches are used in previous studies to tell whether the students are deep or surface learners based on the scale scores (Beheshitha, Gasevic, & Hatala, 2015; Hamm, 2009). This study aimed to group the students who obtained similar scores from the questionnaire by using cluster analysis. Cluster analysis was conducted by using the X-Means clustering algorithm. The process visualized in Figure 1 is an illustration from RapidMiner software. Other statistical analyses were conducted using SPSSS software. The time series graphs to visualize the students’ video viewing data were generated using the R statistic software.

For cluster analysis, at first, the scores obtained by the students from the sub-dimensions of the scale were normalized by converting them into their z-scores. Next, the number of optimal clusters was determined by the X-Means algorithm. After that, whether there were meaningful differences between the obtained clusters in terms of scale scores was analyzed using independent samples t-test. Since the features regarding the video analytics do not distribute normally, the difference analyses within the scope of the first research problem were conducted using the Mann Whitney - U test. Finally, the correlations between the features within the scope of the second research problem were examined using the Spearman’s Rho correlation analysis.

![Figure 1. Cluster Analysis Process](image-url)
FINDINGS

Cluster Analysis
Based on the cluster analysis result, the data were divided into two groups. Table 2 shows
the analysis results of the independent samples t-test, which was conducted to test
whether there is a difference between the two clusters in terms of scale scores. The cluster
means were considered to name these clusters (see Table 2), and the students in Cluster 1
were named Deep Learner (n = 15) and the students in Cluster 0 were named Surface
Learner (n = 16). Independent samples t-test analysis result revealed that there is a
significant difference between the two groups in the scores of deep and surface learning
approaches.

Table 2. Independent Samples T-Test Analysis Result

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cluster 0 (n = 16)</th>
<th>Cluster 1 (n = 15)</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
</tr>
<tr>
<td>Deep Approach</td>
<td>28,81</td>
<td>4,66</td>
<td>36,67</td>
</tr>
<tr>
<td>Surface Approach</td>
<td>31,69</td>
<td>3,72</td>
<td>24,40</td>
</tr>
</tbody>
</table>

Note. *p<.001

Difference Analyses
To analyze whether there are differences in deep and surface learners’ video metrics, Mann
Whitney-U test was conducted. The test results are shown in Table 3. When the test results
are analyzed (see Table 3), except forward seek, there were no statistically significant
differences observed between the two groups. According to this, it can be seen that the
surface learners (Mean Rank = 19.06) watched the video by doing more forward seek than
the deep learners (Mean Rank = 12.73) (U = 71, p = 0.048).

Table 3. Mann Whitney - U Test Results Related to the Video Metrics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Group</th>
<th>n</th>
<th>Mean Rank</th>
<th>U</th>
<th>Z</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Interaction</td>
<td>Cluster_0</td>
<td>16</td>
<td>15,41</td>
<td>110</td>
<td>-0,376</td>
<td>0,707</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>16,63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td>Cluster_0</td>
<td>16</td>
<td>15,22</td>
<td>107</td>
<td>-0,503</td>
<td>0,615</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>16,83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Page Visit</td>
<td>Cluster_0</td>
<td>16</td>
<td>17,28</td>
<td>99</td>
<td>-1,111</td>
<td>0,267</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>14,63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Playing</td>
<td>Cluster_0</td>
<td>16</td>
<td>14,06</td>
<td>89</td>
<td>-1,227</td>
<td>0,22</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>18,07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Pausing</td>
<td>Cluster_0</td>
<td>16</td>
<td>14,22</td>
<td>91</td>
<td>-1,13</td>
<td>0,258</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>17,90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Completion</td>
<td>Cluster_0</td>
<td>16</td>
<td>14,72</td>
<td>99</td>
<td>-0,879</td>
<td>0,379</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>17,37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video Seeking</td>
<td>Cluster_0</td>
<td>16</td>
<td>17,53</td>
<td>95</td>
<td>-0,971</td>
<td>0,332</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>14,37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward Seeking</td>
<td>Cluster_0</td>
<td>16</td>
<td>19,06</td>
<td>71</td>
<td>-1,976</td>
<td>0,048</td>
</tr>
<tr>
<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>12,73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backward Seeking</td>
<td>Cluster_0</td>
<td>16</td>
<td>16,81</td>
<td>107</td>
<td>-0,516</td>
<td>0,606</td>
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<td></td>
<td>Cluster_1</td>
<td>15</td>
<td>15,13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Correlation Analysis**

Within the scope of the second research problem, Spearman's Rho correlation analysis is used to examine the correlation between students’ scale scores and their video metrics. According to the results of the analysis, only the correlation between students’ surface approach scores and the number of forward seek was significant ($r = 0.44$, $p < 0.05$). In other words, there appears to be a moderately positive correlation between the students’ surface approach scores and the number of forward seeks.

**Table 4. Results of Spearman’s Rho Correlation Analysis between the Video Metrics and Scale Scores**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Deep Approach</th>
<th>Surface Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Interaction</td>
<td>0.095</td>
<td>-0.027</td>
</tr>
<tr>
<td>Duration</td>
<td>0.141</td>
<td>0.069</td>
</tr>
<tr>
<td>Video Page Visit</td>
<td>-0.068</td>
<td>-0.032</td>
</tr>
<tr>
<td>Video Playing</td>
<td>0.229</td>
<td>-0.173</td>
</tr>
<tr>
<td>Video Pausing</td>
<td>0.225</td>
<td>-0.154</td>
</tr>
<tr>
<td>Video Completion</td>
<td>0.245</td>
<td>-0.188</td>
</tr>
<tr>
<td>Video Seeking</td>
<td>-0.083</td>
<td>0.198</td>
</tr>
<tr>
<td>Forward Seeking</td>
<td>-0.255</td>
<td>0.444*</td>
</tr>
<tr>
<td>Backward Seeking</td>
<td>-0.009</td>
<td>0.142</td>
</tr>
</tbody>
</table>

Note. *$p<.05$*

**Time Series Graphs**

To advent the third research problem, video viewing behaviors of deep and surface learners were visualized in a time series graph so that students’ video viewing behaviors can be visually compared. Time series graphs are used in video analytics studies to visualize students’ interactions in video viewing processes (Giannakos, Krogstie, & Aalberg, 2016; Kim et al., 2014). In general, these graphs make it possible to see in which parts of the video students interacted the less and the most (the parts where they play, pause, seek etc.), and to acquire information on their video viewing behaviors.

Figure 2 shows the time series graphs reflecting the video viewing behaviors of students with surface and deep learning approaches. The graph was drawn using the data of all students in the related cluster. In the graph, the y-axis represents the frequency values regarding the play, pause and seek events. On the other hand, the x-axis represents the timelines of the video. An investigation on the graph reveals that surface learners watched the video more linearly and had fewer interactions with it. On the contrary, while viewing the video, deep learners were seen to play-pause the video more frequently and focus on the certain areas of the video (peaks).

![Figure 2. Time Series Graphs (A) Surface Learners (B) Deep Learners](image_url)
DISCUSSION, CONCLUSION AND SUGGESTIONS

This study aimed to compare the video viewing behaviors of students with deep and surface learning approaches. In order to identify the video viewing behaviors of the students, nine features were specified, and a video player developed by the authors was used in order to collect data related to these features. With this research, first, whether there are any statistically significant differences between deep and surface learners in terms of video metrics was investigated. Then, the correlations between students’ scale scores and the scores obtained from video metrics were examined. Finally, the video viewing data of deep and surface learners were visualized via time series graphs and were visually analyzed.

Results of the study showed that when deep and surface learners were compared in terms of video viewing behaviors, statistically significant differences were found only in terms of the number of forward seek between the two groups. When mean ranks of two groups compared it was understood that while viewing a video, surface learners seek forward more than the deep learner. The correlation analysis conducted within the scope of the second research problem revealing a positive and significant correlation between the numbers of forward seeks and students’ surface approaches scale scores also supports this finding. When the deep and surface learners’ time series graphs drawn in the third research problem are examined. It is observed that the students with the deep approach clicked on pause and play buttons more while viewing the video, and these actions peak in certain parts of the video. On the other hand, surface learners viewed the video more linearly with the random pause, play and seek actions. These viewing patterns can be used to identify problems in digital materials (video here) and to improve their quality (Ogata et al., 2018).

Learning approach is an indicator of what do students do and which methods they follow while carrying out a learning task (J. Biggs et al., 2001). And interaction data is an indicator of to what extent and in what manner students engage with the learning content. Therefore, students with surface approach are expected to also have surface interactions. Akcapinar (2015) investigated the learning approaches of the student groups who are active on different levels on the Moodle platform, and found that the students with low activity on the platform have high surface learning scores and low deep learning scores, while the students with high activity on the platform have high deep learning scores and low surface learning scores. This present study revealed that, compared to deep learners, surface learners engage in fewer interactions, and that these interactions are displayed randomly, rather than to learn. However, the conducted analyses showed a significant difference between the two groups, but solely in terms of forward seeking numbers. Since the session was conducted in a laboratory with a limited number of students, this may have led to a lack of significant differences between the students studied with the surface and deep approaches in terms of other features. For this reason, it would be useful to conduct a similar study on different videos outside a laboratory engaging a large group of students.

As also addressed by J. Biggs et al. (2001), learning approaches are not invariable characteristics of individuals and may vary depending on the factors such as courses, learning tasks, teachers etc. Dynamic prediction of this structure, which is also correlated with academic performance, based on the interaction data without directly asking students is important in terms of timely intervention on students using surface approach and providing them with feedback for encouraging the use of deep learning approaches (Akcapinar, 2016). The findings obtained here can be used to identify students with a surface approach and to develop intervention mechanisms for them. Instructors can use visual analysis results to re-design their learning materials.
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ONLINE LEARNING AND HIGH SCHOOL STUDENTS: A CULTURAL PERSPECTIVE

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ABSTRACT

The purpose of this study is to investigate the insights of high school students regarding their online learning experiences in the margin of cultural considerations. The study was designed in a qualitative pattern. The data were collected through a questionnaire including eight open ended questions along with demographics. A total of 30 high school students enrolled in an online learning environment participated in this study. The findings revealed that the majority of the students benefited from online discussion activities, as well as posed numerous suggestions. They found it safe to express their opinions due to the feeling of peer and teacher presence. Students reported that one of the primary boundaries was the lack of self-confidence to share and the visibility of their postings by the others. When compared to in-classroom discussion activities, online discussions were found to be more flexible for sharing ideas freely without any pressure. Implications were discussed for further research.

Keywords: Online learning, high school students, culture, qualitative study.

INTRODUCTION

There is a widespread adoption of online learning across the globe to complement “bricks and mortar” manner of education (Selwyn, 2016). McDermott (2017) stated that appropriate pedagogical approaches and technology are forefront excluding cultural dynamics during the operationalization of online learning. In fact, there are two main considerations for the acceptance and use of technology, one of which is technological and the other one is socio-cultural factors (Venkatesh, Thong, & Xu, 2016). On one hand, technological factors might provide both student and teachers with diverse opportunities. For instance, online learning might facilitate students with the opportunity of self-paced learning, access to floating of information over the internet or the flexibility of “anytime anyplace any pace” learning (Leclijze, de Haan, & Ünlüsoy, 2015). Meanwhile, teachers may extend their potential to teach, share materials at a lower cost or contact with students more easily (Jayatilleke & Gunawardena, 2016; Selwyn, 2016). There is no doubt that technological factors might play a prominent role for the widespread adoption of online learning due to its inherent affordances. On the other hand, cultural factors may also
intervene in the operationalization of online learning as learning benefits could not be separated from one’s own social and cultural complex space (Boeri, 2016). For instance, students’ and teachers’ cultural backgrounds with respect to various dimensions as proposed by Hofstede (1986), such as, power distance, individualism/collectivism, masculinity/femininity or uncertainty avoidance, might play an important role on how teaching-learning processes are carried out. With this in mind, it gains importance to reveal how both technological and / or socio-cultural factors might facilitate an improved state of students’ learning along with a more effective teaching-learning practices. Although the inherent affordances of technological factors are not deniable altogether and essentially important to be investigated, the primary concern of this study is how cultural considerations might be associated with online learning environments. From this view, the purpose of this study is to investigate the insights of high school students enrolled in an online learning environment in the margin of cultural dimensions proposed by Hofstede (1986).

LITERATURE REVIEW

Culture and Pedagogical Assumptions

Previous studies report that there is an association between cultural background, learning styles, and cognitive processing (Joy & Kolb, 2009; Sanchez & Gunawardena, 1998). From this view, a body of literature focusing on pedagogical assumptions with respect to cultural differences, particularly presumptions attributed to students and teachers, suggest that there might be variations within different cultural backgrounds, such as Western and non-Western cultures. For instance, Frisby, Slone, and Bengu (2016) investigated student-instructor rapport with college students from the United States of America (USA) and Turkey. The researchers found that there is a statistically significant difference in rapport between the two samples with Turkish students reporting significantly less rapport with the instructors. The researchers discussed this finding with respect to differing cultural background in these two countries. They stated that Turkey has a large power distance culture compared to USA and students may see their instructors as authoritarian and attribute higher positions in the hierarchy that makes interpersonal relationships less appropriate. Kang and Chang (2016) stated that there are three core education beliefs that distinguish students in Confucian culture from their Western peers. First, students in Confucian culture are not generally comfortable in challenging their teacher and stands on the receptive side of learning. Second, conflict is not acquired as a desirable act and should be avoided. Third, students’ academic achievement and success is stressed rather than having fun or excitement with learning experiences. The researchers associated variations in pedagogical assumptions with Hofstede’s cultural dimensions’ theory. Baran (2010) carried out a study with undergraduate students on the use of Facebook as a formal application to support classroom activities. The study revealed that by the end of the term, only half of the students added their instructor to their profile due to the assumption that “teachers should be unapproachable and formal” (p. E147). The researcher justified this finding with Turkey’s large power distance background. Zhang (2007) stated that Eastern cultural tradition has a group-based, teacher-dominated, and centrally organized pedagogical culture in which learners are fully respectful to knowledge and teachers, strengthens orders and disciplines, official teachers’ guide direct the content for teaching, and education is seen as a way to establish higher social statuses which are at the opposite spectrum of Western pedagogy. The existing literature on culture and pedagogical assumptions reveal that the two phenomenon are strictly bounded to each other. In fact, the existing literature emphasize that pedagogical assumptions and presumptions attributed to students and teachers have an influence on how teaching and learning processes are being carried out (e.g. Chen & Bennett, 2012; Mansson & Lee, 2014; Zhang, 2007). At this point, how culture is defined and associated with educational practices is important to be clarified within the context of Turkey.

Turkey in Hofstede’s Cultural Dimensions Theory

According to Vatrapu and Suthers (2007) culture is a concept that has a checkered intellectual history. There are numerous conceptualizations concerning what culture is. For
instance, Dennehy (2015, p. 823) conceptualized national culture as “shared assumptions, values and behavior at a national level.” Although there is a wide variety of definitions, Geert Hofstede’s definition of culture is still influential in contemporary cultural studies. It is defined as “the collective programming of the mind that distinguishes the members of one group or category of people from others” (Hofstede, Hofstede, & Minkov, 2010, p. 6).

According to Hofstede (1983) societies face with fundamental problems and they differ with respect to answers to those problems. To this end, a study was conducted involving 116,000 questionnaires, 50 countries and 3 regions. Participants from Turkey were also included and the results with respect to four cultural dimensions were reported, as well. Two more cultural dimensions were added to the theory during further studies. Figure 1 illustrates the six cultural dimensions and indexes for Turkey.

![Figure 1. Cultural Dimensions and Turkey's Indexes](image-url)

There are six cultural dimensions including power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance, long/short term orientation, and indulgence/restraint. First, as it is illustrated in Figure 1, Turkey has a large power distance index. Power distance is defined as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstede et al., 2010, p. 61). Power distance is about the idea that in a society people are not equal due to unequal distribution of power amongst those people. For instance, take the case of student-teacher interaction. Since teachers generally have more power and authority with respect to students, there is an unequal distribution of power which leads to accepted and expected patterns of behavior. According to Hofstede (1986) there are numerous implications of large power distance cultural background amongst how students and teachers interact. Examples include but not limited to teacher centered pedagogy, teachers as authority figures never contradicted nor publicly criticized, and teachers meriting the respect of her/his students. On the other hand, students in large power distance society speak up in class only when invited by the teachers or they expect their teachers to initiate the communication. This implies that as having a high index of power distance cultural dimension, both students and teachers in Turkey would tend to have those cultural patterns during student teacher interaction. Second, from Figure 1 it is seen that individualism index is low. This shows that Turkey generally stands on the collective side of the spectrum. Hofstede et al. (2010, p. 92) defined collectivism as “societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty.” Collectivism as one of the cultural dimensions has also numerous influences on student teacher interaction. For instance, in collectivist societies face gaining is a major issue both for students and teachers, formal harmony should be maintained by each stakeholder, certificates are forefront rather than acquiring related competence.
Students in a collectivist culture tend to refrain from speaking up in larger groups without a teacher present, particularly in case of an existence of out-group members. Furthermore, rather than treating each and every student as an isolated individual, teachers in collectivist societies are expected to deal with them as part of an in-group. The third cultural dimension is masculinity/femininity in which Turkey’s index is 45, implying that it is closer to feminine cultural background. Hofstede et al. (2010, p. 140) conceptualized feminine society “when emotional gender roles overlap, both men and women are supposed to be modest, tender, and concerned with the quality of life.” There are numerous differences between masculine and feminine cultures with respect to student teacher interaction along with roles attributed to them. In feminine societies, for instance, praising students openly is avoided by teachers and average student is accepted and expected to be the norm by teachers. Moreover, students’ social adaptation skills, teachers’ friendliness, effective student-teacher relationships and proximity between the two are amongst the primary drivers during student-teacher interaction (e.g. Çetin, Ellidokuzoglu, & Dogan, 2014). Fourth, Turkey’s uncertainty index is 85, which is very high. Hofstede et al. (2010, p. 191) defined uncertainty avoidance as the “the extent to which the members of a culture feel threatened by ambiguous or unknown situations.” According to Hofstede (1986) there are numerous implications of high uncertainty avoidance in learning environment. For instance, students feel more comfortable in a structured learning environment in which strict timetables are forefront, detailed assignments are prospected, and objectives are precisely reported. On the other hand, teachers are expected to have all the answers with respect to academic domain, and they generally use academic language. While the cultural dimensions theory is based on empirical data and illustrates comprehensive framework to study cultural considerations across the globe, there are also some critics concerning its applicability to the complex nature of human interaction. One of the primary issues is about the sample used to collect the data; that is, IBM workers. In this regard, researchers caution about its applicability and validity with respect to other groups one of which is students and teachers. Another consideration that should be taken into account is that it underpins nation as a unit of analysis rather than individual which raises doubts concerning the ecological validity even though it is reported that this objection does not have empirical support (Minkov & Hofstede, 2012). Even though this theory posits numerous thresholds, it also opens up new avenues to test whether it is applicable or not with different participants, settings, and cultural niches. In this regard, this study underpinned Hofstede’s (1986) cultural dimensions theory. By citing Cronje (2011) the primary purpose was to get students’ voices to give deeper meanings to those cultural indexes.

Culture and Online Learning

There is a growing body of literature emphasizing the value and importance of how cultural dimensions might influence teaching-learning processes in online learning environments. The operationalization of online learning is classified within three categories with respect to cultural perspectives (Al-Harti, 2005). Studies being operationalized within a certain culture (e.g. Hamdan, 2014), intercultural studies with individuals from different cultural units in a certain culture (e.g. Lecluijze et al., 2015; Sadykova, 2014; Zhang, 2013; Zhang & Kenny, 2010), and cross-cultural studies where individuals are compared with different cultural units (e.g. Commander, Zhao, Gallagher, & You, 2016; Dennehy, 2015). For instance, in a study carried out within a certain cultural setting in Saudi Arabia, Hamdan (2014) found that both students’ learning cultures and the culture of online learning have reciprocal influences on each other. In an intercultural online learning study, Zhang (2013) studied with students from Confucian-heritage culture in the USA. The researcher found that despite online learning environment was seen beneficial for students’ engagement, they intimidated to contact with their instructors due to the fact that instructors’ were attributed with high power. Liu, Liu, Lee, and Magjuka (2010) carried out a study with international students to gather their perceptions toward their online learning experience. They found that Eastern students were more likely to be modest, face saving and prefer group work, while U.S. students preferred being independent, assertive and confident. Although students reported that there were cultural differences, it did not affect their communication or collaboration negatively. Bing and Ping (2008) carried out a study to
investigate whether cultural diversity of learners might influence their interaction behavior in the web-based learning environment. The study showed that learners from different national cultural backgrounds differed from each other with respect to their interaction patterns.

Although there is a growing body of studies investigating insights of the participants from different cultural backgrounds, Uzuner (2009) found that the majority of these studies tend to focus on Asian learners. Hence, it is suggested that researchers from diverse cultural backgrounds should carry out studies that will improve the currently limited understanding of cultural influences in online learning environments (Bozkurt et al., 2015; Wong, Zeng, & Ho, 2016). From this view, this study investigated the insights and experiences of 30 high school students enrolled in an online learning environment, particularly by associating their insights with cultural dimensions proposed by Hofstede et al. (2010).

RESEARCH METHOD

This study is carried out in a qualitative pattern, particularly qualitative descriptive approach by drawing on deductive content analysis. Since there is a low level of interpretation of participants’ specifications, qualitative descriptive approach was depicted (Vaismoradi, Turunen, & Bondas, 2013). As Bloor and Wood (2006, p. 58) stated, deductive content analysis enabled researchers to associate participants’ insights by reporting “who says what, to whom and with what effect.” To this end, in an English Language course, insights of high school students enrolled in an online learning environment for 7 weeks were associated with cultural dimensions proposed by Hofstede (1986). To associate participants’ insights with cultural dimensions, numerous questions were developed by the researchers based on an intense literature review. The qualitative questions developed by the researchers covered five themes and respective associations with cultural dimensions theory were derived from those five themes. Those themes are participants’ experiences of online discussion activities, perceptions of self-expressing, perceptions of teacher, instructor and peer presence, factors stimulating or hindering participation, and differences between online and face-to-face discussion activities.

Participants

This study was conducted with 30 high school students as part of their English language classes during the academic year of 2016-2017. There were 18 female and 12 male students. The age of participants ranged from 16 to 18 years old. Twenty nine of them reported that they had a smart phone with internet connection. The online discussion activities were carried out on the basis of voluntary participation, there was no penalty or incentive for the participation. These students were in a class where they extensively study English as a foreign language. All of the students, the teacher and the instructor were from Turkey, implying that the study was carried out within a certain cultural context. For the purpose of this study, online learning is defined as “web based learning environments consisting of digitally formatted content resources via the use of the World Wide Web and communication devices to provide communication link between the instructor and students where they can actively interact” (as cited in Nandi, Hamilton, Chang, & Balbo, 2012, p. 685).

Setting

The online learning experience lasted for seven weeks, while two of them were for ensuring technical appropriateness and online socialization, five of them were discussion activities. To ensure that all the students were qualified to experience online learning, Salmon’s (2002) five-stage model for teaching and learning online was followed. Figure 2 illustrated the model and the processes underpinned in this study.
According to this model, there are five successive stages which are access and motivation, online socialization, information exchange, knowledge construction, and development. This model primarily focuses on how online learners might benefit from the online learning environment and how e-moderators could follow the successive stages. In light of this model, first, EDMODO, which is a free web-based platform that enables students, teachers, and parents to enrol in online learning environments, was chosen due to accessibility considerations. After the researchers ensured that the content and technical considerations are appropriate, students were informed about the process during one of their classes. Students were informed that they will enrol in an online learning environment with their full names in which online discussion activities will be operationalized. After that, researchers prepared a short video with Screencast-O-Matic, which is a free application to capture monitor screen as video. This video demonstrated EDMODO, such as how they can register and enrol into the group defined for the English language course or how they might reply to each other. Second, after ensuring that students have access to the group, for the first activity as online socialization, they introduced themselves both for controlling whether they have problems with their postings and to meet with the instructor that they do not know and see before. Third, researchers designed five discussion sessions and shared it online. The primary purpose of these discussion sessions were to enable students experience the online learning environment and to get their insights.

Quality of Online Interaction
Based on the rubric developed by Roblyer and Wiencke (2003) to assess the quality of an interaction operationalized within distance courses, the researchers determined several interaction patterns in line with both students’, teacher’s and researchers’ capabilities for carrying out online discussion activities. There are five design elements to assess the interaction quality which are illustrated in Table 1. There are three levels of interaction and interactivity of a course; which are low (1-9 points), moderate (10-17 points) and high (18-25). The interactivity of online learning environment designed and operationalized in this study have 13 points from the rubric implying that the level of interaction and interactivity was moderate.
Table 1. Interactive qualities of online learning environment

<table>
<thead>
<tr>
<th>Element #</th>
<th>Qualities</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Social / rapport building</td>
<td>Students, teacher and instructor introduced themselves and provided additional personal information with their biographies.</td>
<td>2</td>
</tr>
<tr>
<td>2 – Instructional design</td>
<td>Discussion activities required students to communicate both with the instructors and their peers.</td>
<td>3</td>
</tr>
<tr>
<td>3 – Interactivity of technology resources</td>
<td>Students, teacher and instructor had a two-way, asynchronous exchanges of information.</td>
<td>2</td>
</tr>
<tr>
<td>4 – Evidence of learner engagement</td>
<td>Toward the end of discussion activities, most students (50% - 75%) were replying to and initiating posts when required and voluntarily.</td>
<td>4</td>
</tr>
<tr>
<td>5 – Evidence of instructor engagement</td>
<td>Instructors responded to most student queries; responses usually are within 48 hours; feedback sometimes offers some analysis of student work and suggestions for improvement.</td>
<td>2</td>
</tr>
</tbody>
</table>

Data Collection and Analysis
The data of the study were collected by a qualitative questionnaire developed by the researchers. There were 8 open-ended questions, along with demographics (Appendix A). Although 31 students enrolled in online learning environment, the data were collected from 30 students after the completion of activities. During the data collection, students were informed to specify their thoughts as much detailed as possible.

Data were analyzed in a deductive qualitative content analysis approach. In this regard, the study followed and underpinned concepts, procedures and measures as suggested by Graneheim and Lundman (2004) which is illustrated in Figure 3. First, before analyzing the qualitative text data, participants’ insights were read several times to gain a sense of the whole. At this point, the researchers presumed and realized that “a text always involves multiple meanings and there is always some degree of interpretation when approaching a text” (Graneheim & Lundman, 2004, p. 106). With this in mind, along with focusing on the manifest content as it deals with the obvious aspects of the data rather than the hidden agendas (Bloor & Wood, 2006), latent content was also taken into consideration in case it is necessary. Second, qualitative questionnaires including text data fulfilled by each participant was determined as the unit of analysis. Third, each qualitative text data under representative question was considered as a whole; in other words, as a meaning unit. Fourth, meaning units were condensed under representative cultural dimensions. Fifth, abstraction within the whole data was established through grouping them under representative cultural dimensions. Sixth, based on the theoretical framework and predetermined qualitative questions, three content area was identified; which are individualism/collectivism, power distance, and uncertainty avoidance. Seventh, participants’ insights were assigned with codes, but the primary aim of this study was not to reach a whole picture about the distribution of frequencies and percentages of those codes. In this regard, just a few examples were illustrated in Table 2 to provide an insight concerning the procedure of data analysis.
Table 2. Several Examples for the Analysis of the Qualitative Text Data

<table>
<thead>
<tr>
<th>Meaning unit</th>
<th>Condensed meaning unit</th>
<th>Code</th>
<th>Cultural dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>I tried to express my own feelings and thoughts clearly and had not any</td>
<td>Expressing ideas safely thanks to the presence of people already familiar with</td>
<td>Presence of</td>
<td>Collectivist tendency</td>
</tr>
<tr>
<td>barrier in doing so. This online learning environment was <em>restricted to people that you know</em> which enables to share safely (Student F, Male).</td>
<td></td>
<td>in-group members</td>
<td></td>
</tr>
<tr>
<td>I think the instructor should participate more. He always approves of our</td>
<td>Refraining from confrontations</td>
<td>Face gaining</td>
<td>Collectivist tendency</td>
</tr>
<tr>
<td>ideas. He never refuses or contradicts (Student R, Male).</td>
<td></td>
<td>and preservation of harmony</td>
<td></td>
</tr>
<tr>
<td>For saying truth, this application is beneficial for me. Because I can apply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>special words here. I can talk with classmates and I can develop my thinks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>There are two perfect teacher for us and this is so important.</em> I mean that</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>when someone here for helping you, this is really good thing (Student T,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3. Concepts used during qualitative data analysis
In classroom setting where we are constantly gazed, not confident enough to express our thoughts fully is different from online activities which enabled me to participate in at home by voicing my inner and deeper thoughts without the pressure of outer voices (Student S, Female).

Initially, I struggled to share my opinions in online learning environment. Later on I realized that I can post my thoughts in which my peers and my teacher helped me. I recognized an online learning environment where we can brainstorm. I had no difficulty or problems concerning security issues as I enrolled (Student B, Female).

### Validity of the Qualitative Questionnaire

The validity of the qualitative questionnaire was satisfied by getting expert views with a form. There were 8 questions and five experts provided feedback; three of which were from the field of education, and the two of them were from curriculum and instruction. There were three aspects to fulfill which are content validity, the appropriateness of language and meaning for the target participants, and feedback for each question, if necessary. The directions and feedback gathered enabled researchers to further refinement. After minor revisions gathered from the experts, the final version of the qualitative questions were completed.

The reliability of the qualitative questionnaire could not be explored due to the limitation of reaching participants experienced online learning at high school level. Hence, although researchers’ experiences in carrying out studies in online learning environments and experts’ views provide a level for validity, establishing the reliability of the qualitative questionnaire might be stated as one of the limitations of this study.

### Limitations

The study was carried out in a qualitative pattern and investigated insights of high school students enrolled in an online learning environment. First, as Fraenkel and Wallen (2006) argued, in qualitative research collecting and interpreting data is so dependent on the researchers that the consideration of researcher bias should be taken into account for evaluating the findings. Second, the participants were acknowledged with respect to national cultural backgrounds, rather than individual tendencies in which there might be a fallacy of homogeneity (Uzuner, 2009). Third, the discussion activities were carried out in English. Although students were in English language class and extensively exposed to English as a foreign language, students having language difficulties might not be attracted as much as those having higher levels of proficiency. Fourth, the data of the study were collected by students’ English language teacher in one of their courses by self-report measure in which there might be an extent of social desirability bias. And finally, by citing Chen and Bennett (2012, p. 690) these limitations “do not discount the possibility that other factors above and beyond the scope of this study may also have played a role.”

### FINDINGS

The findings show that students generally have positive perceptions and benefitted from online learning environment, along with proposing implications for further refinement. The analysis showed that there are five themes including their experiences of online discussion activities, perceptions of self-expressing, perceptions of teacher, instructor and peer presence, factors stimulating or hindering participation, and differences between online
and face-to-face discussion activities. Figure 4 illustrates participants’ insights and respective cultural considerations. Supporting quotes were illustrated with respect to each theme as derived in light of qualitative questions.

- More comfortable to voice up the minds in online learning possibly due to lessened power asymmetries
- More teacher/instructor presence was expected
- High value for teacher/instructor comments
- Expectance of smaller groups for online activities
- Refraining from confrontations
- Maintenance of the in-group harmony
- Even though masculinity / femininity, long / short term orientation, indulgence / restraint dimensions play significant roles, this study did not focus on these cultural dimensions.

Figure 4. Participants’ Insights Associated with Cultural Dimensions

**Online Discussion Experiences**
Twenty-eight out of 30 students stated that they benefitted from online discussion activities. At the beginning of the online discussion activities, one of the students struggled to benefit, yet later on she handled with the help of her peers and teacher. Meanwhile, there was only one student (Student O, Female) stated that she could not benefitted from the online discussion activities as much as her peers. Here are the quotes of students.

*Student O, Female: I think this application is useful for us. Because when we write here, our writing ability is improving. At the same time our*
vocabulary is improving as well. According to me this application is both enjoyable and instructive. We should absolutely continue in semester.

Student O, Female: I did not participate in online discussion activities, I mean I did not want to due to fact that I am a timid person. My friends shared and wrote well that made me think that I cannot write as good as them. So, I did not share or write in online discussion activities.

Student K, Female: I think it is a very efficient and useful application for us. Because while we are discussing a topic here, we can also see the different viewpoints. We should definitely continue the semester as well. Both we see different viewpoints and improve on writing in English. It is certainly my opinion, but we can talk more about social issues.

Self-expressing in Online Learning Environment

Twenty-three students stated that they had no problem or difficulty in expressing their opinions clearly and comfortably. Meanwhile, there was one student (Student B, Female) struggling to express her ideas initially, but later stated that she was able to share or write down her thoughts with the help of her peers and teacher. Furthermore, there was only one student stated that she (Student O, Female) could not express herself in environments circled with crowded people, hence hindered her to share in online learning environment.

Along with self-expressing skills, twenty-one students stated that they found it safe to share their opinions in online learning environment due to the fact that they know each other since they were in the same class and their teacher was also there. Here are the quotes of students.

Student B, Female: Initially, I struggled to share my opinions in online learning environment. Later on I realized that I can post my thoughts in which my peers and my teacher helped me. I recognized an online learning environment where we can brainstorm. I had no difficulty or problems concerning security issues as I enrolled.

Student C, Female: I find this online learning environment safe. I have difficulty in expressing my thoughts in face-to-face setting in the classroom, yet EDMODO enabled me to both exchange ideas with my peers and enhanced my writing skills.

Student F, Male: I tried to express my own feelings and thoughts clearly and had not any barrier in doing so. This online learning environment was restricted to people that you know which enables to share safely.

Student H, Female: I clearly expressed any idea that I wanted to and I found this online learning environment safe. Because, one can enroll with the approval of the teacher and no one other than your classroom could see your posts.

Teacher and Instructor Participation

Twenty-seven students reported that they had positive perception toward the participation of their English language teacher, and they found the participation of their teacher as a source of motivation to participate more to online discussion activities. Furthermore, twenty-eight students reported that they appreciated the participation of an instructor that they do not know and see before. They highly valued the feedback that they got from the instructor. One of the students (Student R, Male) reporting that his teacher did not participated adequately by justifying with his lack of time to participate, and suggested that the instructor must participate more. Finally, there was a student expressing frustration because of a lack of guidance of the teacher (Student L, Male). Here are the quotes of students.
**Student L, Male:** I have no doubt concerning my English language teacher’s proficiency, but he did not provide feedback to every student or he did not fully state his viewpoint. The reason might be the number of students enrolled in online learning environment; I do not know, but I felt bad when he did not provide me with feedback as I think that my comment is not valuable. I need my teacher’s thoughts and comments. I wish he could provide his own thoughts on each and every students’ posts. But I think he did not act in this way on purpose.

**Student T, Female:** For saying truth, this application is beneficial for me. Because I can apply special words here. I can talk with classmates and I can develop my thinks. There are two perfect teacher for us and this is so important. I mean that when someone here for helping you, this is really good thing.

**Student M, Male:** I think the teacher participation was quite good as he highlighted interesting posts and posted different spectrum of viewpoints which made me feel that I am under surveillance of my teacher. The more our teacher participated in online discussion activities, the more students participated, as well.

### Enablers / Barriers of Participation in Online Discussion Activities

Students reported numerous enablers and / or barriers for their participation to online discussions. On one hand, the participation of foreigners to online discussions, more engaging activities and discussion topics or grading of discussion sessions were reported as enablers of a more participatory activities in online learning environment. On the other hand, access to technological resources and the internet, the anxiety of self-expressing and writing alone, the lack of interesting and engaging discussion topics, lack of appropriate time, one’s shy or timid personality, the lack of self-confidence, the visibility of posts by everyone, and lack of appropriate reply or feedback were listed amongst barriers of having a more participatory online learning environment. The most fundamental concern was reported about access to technological resources, more specifically to the internet. One of the students (Student B, Female) reported that she intimidated to express her thoughts as she will be understood wrong by stating that “my fear of expressing myself wrong hindered my participation in online discussions more frequently. However, as I started to get positive comments on my posts, I realized that my fear was not as I think.” One of the interesting barrier was reported by Student C (Female) about writing alone by sharing “initially, I was intimidated to express my thoughts since I felt alone, yet later on I realized that handling alone is not a barrier in which my teacher supported to overcome this barrier.” Another barrier was reported by Student J (Female) concerning the language of online discussions; that is English, by stating that “since the language of discussions in online learning environment was fully English, it might be frustrating due our posts were visible and those who have not confidence with their writing directly withdraw from participating.” Along with such concerns, many of the students reported that lack of interesting and engaging discussion topics was one of the pivotal barriers that hindered them time to time from participating more frequently and effectively. One of the remarkable viewpoint reported by a student (Student T, Female) was about how to have a more participatory online learning environment; that is grading those activities. She shared that “If there was a grading policy, it could be much more effective. In that way, students would try harder and more attentive to get ahead of each other.”

### Differences between Online and Face-to-Face Discussion Activities

Students reported numerous differences between their online and face-to-face in classroom discussions, yet one of the most prominent differences that each and every student stated is that they were expressing their feelings and opinions in a more flexible and free manner in online learning environment. Many students, particularly those feeling restrained, shy or timid during or having difficulties expressing themselves by speaking in
classroom activities, found it easier to share their thoughts in writing than speaking. Student C (Female) reported:

In classroom settings, we express our opinions by speaking which I really have difficulty with. I cannot express my impressive thoughts by speaking. EDMODO was useful for me. If I could express my thoughts by speaking in classroom, it will be useful as much as EDMODO.

Similar concerns were reported by many of the students when they compare the differences between the online and face-to-face in classroom activities. One of the students (Student E, Female), for instance, appreciated the flexibility of online discussion and reported that "I participated in online discussion activities at home where I could think deeper and without pressure before I shared my thoughts. This is not generally possible at school.” The other student (Student H, Female) recognized that “I might sometimes become shy in classroom, yet I feel more relaxed and clearly express my ideas in online discussion.” Furthermore, one of the students (Student J, Female) highlighted that “activities that are carried out in classroom settings, many of the students hold off from participating into, yet by getting help from the internet online activities become more comfortable.” One of the student (Student M, Male) appreciated the equal opportunities for each student by reporting that “everyone can comment, reply on or critique each other by voicing their thoughts in online learning environment in which there is no shyness or embarrassment.” One other interesting difference reported by one of the students (Student N, Female) is that “in classroom activities, we deprive of courage for speaking or we express our thoughts in a limited extent, yet online learning environment is a great opportunity for us. It facilitates us to voice our opinions that we cannot speak in classroom setting.” The consideration of social influence was also emphasized by one of the students (Student S, Female) in a way that “I think that students in online learning environment easily transfer their opinions, because of the fact that there is no one around to be influenced.” Similarly, Student U (Male) also differentiated the opinions generated in classroom and at home when participating in online learning environment by stating that “ideas inspected in classroom setting might differ from those generated at home.” On the contrary, Student O (Female) preferred in classroom activities by reporting “in classroom activities, if the teacher chooses you to complete the activity, you have to do it; which is good, however, since online learning was a free environment, I did not participated.” Finally, Student S (Female) also expressed her concern for differences of both online and face-to-face in classroom discussions and shared “In classroom setting where we are constantly gazed, not confident enough to express our thoughts fully is different from online activities which enabled me to participate in at home by voicing my inner and deeper thoughts without the pressure of outer voices.”

DISCUSSION

The data collected from 30 high school students enrolled in an online learning environment revealed the insights of learners concerning their online learning activities. The findings shed light on how students interact with the content, their peers, teacher and instructor. The findings also revealed several differences between activities that were carried out in online and face-to-face in classroom learning environment.

First of all, although there were several boundaries, the majority of the students enrolled in online learning environment stated that they benefitted from these activities. This finding is consistent with previous studies reporting that online learning might be beneficial for students’ learning (e.g., Commander et al, 2016; Hamdan, 2014; Sadykova, 2014; Zhang, 2013).

Second, the findings revealed that students found it safe to express their feelings and opinions comfortably due to the fact that their peers and teacher were also there. One of the possible explanations for this finding might be associated with collectivist cultural background. In collectivist cultures, such as Turkey (Hofstede et al., 2010), students feel
safer to voice up their opinions in smaller groups particularly where the teacher is present. Furthermore, if there are strangers or out-group members, it will get more difficult to enable student participation to activities (Hofstede et al., 2010). In fact, this finding confirms previous research on interaction patterns in online learning environment. For instance, Stepanyan, Mather, and Dalrymple (2014) investigated the interaction patterns in a multicultural online collaborative learning environment and found that there were different interaction patterns with respect to cultural differences in which those sharing the same cultural background tended to interact amongst themselves. Similarly, Lecluijze et al. (2015) investigated Dutch, Moroccan-Dutch, and Turkish-Dutch youth’s online social network experiences. The study showed that Turkish-Dutch youth tended to find information and share media content primarily by engaging in their own ethnic transnational networks. This finding suggests that learners’ need for the feeling of teacher and peer presence in online learning environment might change with respect to cultural background and it should be adjusted with learners’ needs. Particularly, as this study found, students might find it safer and more secure to express their feelings where in-group members; their peers and the teacher, exist possibly due to a more collectivist tendencies.

Third, students highly appreciated the participation of both their English language teacher and an instructor that they do not know and see before. Furthermore, students expected higher levels of participation of their teacher and the instructor. Confirming previous studies this finding indicated that students needed guidance of their teacher and the instructor, particularly valuing the comments or feedback that they received from them, even felt that their posts were not valuable as they did not get feedback from the teacher and/or instructor. This finding is also consistent with previous studies. For instance, Nandi et al. (2012) reported that students depended highly on the feedback that they got from their instructor in online discussion. Baran (2010) found that when the teacher commented on students’ postings, they felt excited. Mazzolini and Maddison (2003) found that the way instructors post in online discussion forums might have an influence on students’ perceptions and discussions by arguing that different levels of instructor participation might increase or decrease students’ participation. This finding suggest that the feeling of teachers’ and / or instructors’ presence in online learning environment is an important element. One possible explanation for this finding might be associated with large power distant cultural background. As Baran (2010) stated, students and teachers expect and accept “ascribed” behaviors and students expect to experience the knowledge and authority of the teacher regardless of the learning environment, whether it is online or face-to-face. As Turkey has a large power distant cultural background, students need for higher levels of teacher presence in online learning environment show that they might need and value teacher knowledge, authority and experience. One possible implication of this finding might be about increasing the awareness of teachers and instructors concerning cultural dynamics in online learning as they unconsciously could not recognize those patterns and needs. For instance, McDermott (2017) found that even though the faculty recognize the diverse learning needs of their students, culture was not included as a consideration either in the design or delivery processes of the online courses. In this regard, raising awareness of both students and teachers for a more culturally inclusive learning experience in online learning environment might be one of the suggestions and implications, as well.

Fourth, students also reported numerous enablers and/or barriers that influenced their active participation, such as, access to the internet, the anxiety of self-expressing and writing alone, one’s shy or timid personality, the lack of self-confidence, the visibility of posts by everyone, and lack of appropriate reply or feedback from the teacher. One of the most influential barrier that the majority of the students reported that their avoidance of sharing their ideas since they are visible to everyone and the lack of self-confidence. There are two possible explanations for this finding which might be associated cultural dimensions; one of which is the collectivist and the uncertainty avoidance dimensions. According to Hofstede et al. (2010) face gaining is an important element for the structure of a classroom in a collectivist culture both for students and teachers. Furthermore, confrontations and conflicts should be avoided as not to hurt anyone and students should not lose face. While the collectivist dimension might play a role for the visibility of the posts.
by everyone and the sense of a lack of self-confidence, this situation might also be attributed to the dimension of uncertainty avoidance. Turkey has a very high uncertainty avoidance index implying that what is attributed with uncertain is to be avoided. In this regard, since participants were not familiar with online learning environment before and it is a new and different way of carrying out learning activities, it might be associated with an uncertain situation that could have an influence on their self-confidence to post and share their ideas in online learning environment. In fact, Roberts and Kanagasabai-Rajah (2013) offered a solution to overcome this barrier. They investigated the influence of anonymity on students’ sharing in online discussion board and found that students were more likely to share when they were able to post anonymously. The researchers suggested that anonymous postings might be used as an alternative way to encourage a more participatory online learning environment. Such different strategies appropriate and relevant with the cultural needs of students might improve the quality of interaction in online learning environments.

Finally, students reported numerous differences between discussion activities carried out online and face-to-face. The majority of the students reported that online discussions were more flexible for them to share their ideas freely without any pressure. This finding is in line with numerous studies within the literature. For instance, Comer and Lenaghan (2012) offered that online asynchronous discussions might be more inclusive than face-to-face discussions for some students, particularly those having difficulties in classroom setting. Gunawardena (2013) stated that computer-mediated communication might equalize power and status differences in large power distance societies. In this regard, one of the possible explanations for this finding might be associated with the cultural dimension of large power distance cultural background in Turkey. The reason why students found it more comfortable to share their ideas in online learning environment is that the teacher in classroom discussion activities have a large power in which students intimidate to challenge their teachers’ and peers’ ideas to avoid conflict and disagreement. In large power distant classrooms, teachers are not contradicted or criticized and they are treated with deference even outside the school (Hofstede et al., 2010). Hence, the online learning environment facilitated students to have the opportunity of expressing their ideas more freely; that is, without the pressure of their peers and the teacher. This might also be attributed to the lessened power asymmetries in online learning environment as stated by Zhang (2013). Thanks to a more egalitarian distribution of power in online learning environment, students might found it to voice their minds more comfortably in a lessened pressure from the peers and the teacher.

CONCLUSION

From a qualitative pattern, this study investigated the insights and experiences of high school students’ in an online learning environment. The study revealed participants’ insights particularly by associating them with cultural dimensions proposed by Hofstede et al. (2010). The study provided evidence that online learning environment is beneficial for students learning. However, several concerns regarding the reciprocal interaction between students, teacher and instructor were also revealed which are highly attributable to cultural aspects.

There are two primary implications of this study for future research; (1) designing culturally inclusive online learning environment and (2) the culture of online learning environment. One possible suggestion to design and operationalize a more culturally inclusive online learning environment might be established by following numerous guidelines and frameworks as suggested within previous studies (e.g. Dreamson, Thomas, Hong, & Kim, 2017; Rutherford & Kerr, 2008). For instance, Rutherford and Kerr (2008) offered numerous examples of delivery beginning from low degree of cultural inclusivity to high degree of cultural inclusivity. Second and one of the most significant implications is about the culture of online learning which is generally “at odds with local cultures and contexts” (McDermott, 2017, p. 3113). The focus of online learning depends on Western / Anglo approach in which the values of “independence, low power distance, acceptance of risk and
“low context” are forefront (Goodfellow & Lamy, 2009, p.6) which contradicts with the cultural values of Turkey in which interdependence, large power distance, high uncertainty avoidance and high context cultural background exist (e.g. Baran, 2010; Erdem, 2006; Erdem & Günlü, 2008; Hofstede et al., 2010). In this regard, it is important to distinguish the local culture from the affordances of technology as it is not the artifact that is accessible and available but “how the members of the group interpret, use, and perceive them” (as cited in McDermott, 2017, p. 3112). In this regard, deciding on whether online learning environment is appropriate and relevant to empower students’ learning above and beyond Western cultural dispositions is an important consideration to be taken into account. For instance, if online learning environment is perceived as a more egalitarian space in which students voice up their minds more comfortably compared to face-to-face classroom setting, is it still valuable within local cultural setting? Or what it means when teachers, instructors and researchers uphold with “relentless imposition of Western values” (Yang, 2003, p. 282) to empower student learning even though those values misfit with both the students and their own cultural niches. Such considerations are still elusive that needs further and deeper investigations.

Along with numerous implications, the findings might provide teachers, scholars and instructional designers with a better understanding for how cultural aspects might influence students’ learning in online learning environment. This study contributed to the currently limited understanding of how culture could play a significant role in designing and operationalizing online learning environments, as well as provided evidence to the existing literature on culture and online learning. Future studies might focus on cultural dimensions at individual basis rather than the national one, along with specifically focusing on one cultural dimension. Furthermore, cultural dimensions at the individual level should be examined with respect to gender differences as they might be perceived differently at individual level. The interaction patterns between the teacher and students during the operationalization of online learning could be adjusted with respect to different cultural backgrounds as students from collectivist cultures might need more interaction and guidance in faceless learning environment. Finally, as Reinecke and Bernstein (2013) suggested rather than operationalizing already available online learning environments, culturally adaptive learning interfaces could be designed, developed and implemented to empower students’ learning.

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REFERENCES


Qualitative Questionnaire
Dear participant,

This study examines the insights of online learning experience. It is kindly expected that you respond to the questions listed below and state your thoughts in detail. It will take approximately 20 minutes to complete the questionnaire, and the data will be used only for the research purpose.

Thank you so much for devoting your valuable time to fulfil the questionnaire.

• Gender :
• Age :
• Have you ever experienced learning through online environment? :
• Do you have a smart phone? :
• Do you have internet access? :

Please explain each of the items below as much detailed as possible.

1. What do you think about online learning environment you enrolled during the course?
2. Could you state your opinion comfortably in online learning environment?
3. What do you think about the barriers that hinder you to participate in online learning activities?
4. What should happen to engage you and your peers to participate more in online learning activities?
5. What do you think about the participation of your teacher to online learning activities?
6. What do you think about the participation of an instructor to online learning activities?
7. Could you explain your feelings during your participation in online learning activities as much detailed as possible?
8. What do you think about the differences between activities carried out online learning environment and face-to-face classroom environment?

* Note that the qualitative questionnaire and participants’ responses were in Turkish and language validity was not established for the English version.
SIGNALING PRINCIPLES IN INTERACTIVE LEARNING MEDIA THROUGH EXPERT’S WALKTHROUGH

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ABSTRACT

This study analyzes the impact of signaling principles upon the effective use of interactive learning media. Normally, designers just design and develop learning media for use in schools without considering the way it eases users’ tasks. Bearing in mind that signaling users while they are learning through interactive learning media is important, this study incorporates signaling principles while designing it. Thus, this paper aims to discuss the appropriate signaling principles for learning media from experts’ perspective. The Iterative Triangulation Methodology was applied to achieve the aim. Altogether, activities were carried out in three phases: requirement analysis, design and development of the prototype, and expert evaluation using a walkthrough. Results revealed that although the prototype was designed by involving users, experts still discovered a number of flaws in the exercises as a result of not properly applying the signaling principles.

Keywords: Signaling, principles, walkthrough, interaction design, application.

INTRODUCTION

Multimedia has been used in improving the quality of teaching and learning process (Munadi, 2013). It makes learning contents more attractive, easily understood, more varied, and with an increased number of learning activities (Mayer, 2017), which implies in its design (Aziz, Mutalib, & Sarif, 2015). When properly designed, multimedia learning could transform abstract concepts into concrete; bring the phenomenon of dangerous, rare or difficult to obtain to be presented into the class; present extremely fast-moving objects in a slow representation; allow students to interact directly with the environment; allow
uniformity of observations and perceptions for student learning experience; generate motivation to learn; present learning information consistently and can be repeated or stored according to the need; and present the message or learning information simultaneously. In fact, Mayer (2017) goes beyond that, stating that it supports various tasks that enable learning to take place in a virtual environment. It is inline with the requirements of the fourth industrial revolution (4IR), which underline that the use of technology is absorbed into daily life, including education. Every society has to be ready to face it (Ward, 2016).

Considering such advantages, various studies have been carried out for the purpose of enriching the learning experience. As an example, Dolhalit, Salam, Mutalib, and Yusoff (2017) embedded persuasive principle in their multimedia learning in promoting awareness of truancy among disadvantaged students. Elkabani and Zantout (2015), and Aziz, Mutalib, and Sarif (2017) applied simplicity principle in their multimedia learning for visually-impaired learners in schools, while Tosho, Mutalib, and Abdul-Salam (2016) designed a multimedia learning to enhance inclusive education. Walsh, Petrie, and Odutola (2014) used multimedia to teach about culture. It was also used in teaching practical skills (Baharuddin & Dalle, 2017), and in extremely-crowded situations (Al-Aidaroos & Mutalib, 2015), which are part of the initiatives to prepare the society for facing the learning paradigm in the 4IR (Baygin, Yetis, & Karakose, 2016; Li, Hou, & Wu, 2017). One challenge in dealing with the 4IR is the ability to design solutions creatively (Carter, 2017).

Gardner expresses eight different types of intelligence through his Multiple Intelligences theory (Gardner, 1983; Gardner, 1993). One of them is visual intelligence, which argues that some people learn best through visual representation. In response to that, this study argues that multimedia learning will benefit students in their learning process (Tomita, 2017). It is especially applicable for the subjects (like physics) that contain processes involving difficult-to-get materials.

'Physics' originates from Greek, which means "natural." It is part of the science that studies the relevance of physical concepts with the real life, which consists of four dimensions: (1) way of thinking; (2) ways to investigate; (3) knowledge; and (4) its interaction with technology and society (Chiapetta & Koballa, 2006). Many studies have been carried out to support the teaching and learning of physics. Regarding this, Doyan and Sukmantara (2014) developed an intranet for the physics course. They used the intranet to increase learners' various skills. Similarly, Stankova, Barmasov, Dyachenko, Bukina, Barmasova, and Yakovleva (2016) studied the efficiency of computer technology in learning physics. In fact, Toenders, De Putter-Smits, Sanders, and Den Brok (2017) worked with visually-impaired learners to solve their problems. Those studies focus mainly on providing contents in digital form, with various media representativeness. Besides physics, works in other science streams have also been carried out. As an instance, Aksoy (2012) utilized animation in teaching 7th-grade science and technology course. Meanwhile, Chiang, Yang, and Hwang (2014) used augmented reality, and Fautch (2015) used flipped classroom to enable learners to learn more actively.

However, ensuring learners are happy using the multimedia in learning is another issue. Accordingly, this study attempts to design a web-based learning media (as carried out by Butcher (2006)) for physics for use in schools in Indonesia. For the purpose of this study, static fluid is selected. It has been decided after observing the practices in schools. Through the observation, it was found that laboratories are abandoned, but topics are delivered through conventional lectures. It is because laboratories have limited tools for experiments, besides the inability of the laboratories to support a large number of students. As a result, learners feel bored learning physics topics. Those topics could be best learnt through experiencing them, so that they could visualize the processes and their effects. However, cost really matters in making all tools available. Thus, an alternative solution could be attempted. This could be overcome through the use of media technology, as demonstrated in the work of the researchers discussed in the previous paragraphs.
Designing and developing interactive learning media must be tailored for the intended users, and appropriate for the context of use; who are, in this case, the school learners in Indonesia. Otherwise, such media cannot achieve the goals in the desired way. The concern of this study is on learning experience, as recommended by Cooper, Reimann, Cronin, and Noessel (2014). Users tend to get frustrated when they experience difficulties in utilizing the learning materials (Preece, Sharp, & Rogers, 2015), hence they do not engage with the learning activities and the learning contents. According to Sweller, Ayres, and Kalyuga (2011), eliminated exercises and reduced cognitive load are among factors that could increase user engagement in using interactive learning material. Among the famous ways to ensure that is by considering certain principles in designing the product (Clark, 2014). In response to that, this study applies signaling principles in designing the web-based interactive learning media, as recommended by Mayer (2014), and Mautone and Mayer (2001). It is one of the principles in multimedia learning (Butcher, 2014). It has to go through a scientific and systematic process (Mayer, 2009; Mayer 2011). Thus, this paper aims to demonstrate the expert review of the web-based learning media.

This section discusses the background of this study, including the problem to be solved. Next, the research procedure is explained. Then, the results and findings are presented. Finally, this paper ends with a discussion of the impact of this study on the context.

METHOD

This study involves three parts; requirement analysis, development, and evaluation; which require iterations of processes. In fact, there are a number of iterated data sources and methods. To fit these requirements, this research adopts the Iterative Triangulation Methodology. The triangulated data source and methods are visualized in Figure 1. Triangulation is applied in terms of data source, method, theory, and data analysis.

- Data source triangulation – this study gathers data from different time, space, and persons. This increases the possibility of revealing a typical data or the potential of identifying similar patterns, thus increasing the confidence of the findings.
- Methodological triangulation – could also be called mixed-method or multi-method, and can be seen in both data collection method and research method. Use of different methods provides richer information to the study.

Further, Figure 2 visualizes the steps carried out throughout the research work mapped with the deliverables.
Figure 2 shows that the requirements were gathered through observation and interview. Upon commencement of this study, having understood the problem, as discussed in the Introduction section, this study observed the teaching and learning in the classroom. The teaching and learning practices in three schools in Banjarmasin and three schools in Medan were observed. Prior to the observation, this study made a proper arrangement with the management of the schools. At this point, where the goal of the observation was to understand the current state of teaching and learning practices, observing six schools is sufficient, because the six schools already cover rural and urban areas, running standard curricula by receiving funds from the government. In the observation, it was found that teachers teach in a conventional way, and learners do not participate. It is totally book-based, and learners show no excitement. In each school, after a few sessions of observation, this study interviewed the teachers. The interviews were held in schools, where they teach. Altogether, 19 teachers involved in the interview (between 1 and 3 teachers each school). The aim of the interview was to gather their view on the use of visual representation (multimedia learning application) in their teaching and learning on top of the book. Also, it was aimed to gather additional input to see if they are happy with the multimedia learning application.

Feedbacks of the interview were obviously as expected. The teachers favored the idea of utilizing multimedia learning application for their classroom teaching. In further discussion, the teachers agreed to select static fluid as a start. Particularly, they emphasized that Pascal law, submarine, regional water company, and principal of Archimedes are the topics that must be made available. It was decided that the topic is hardly explained with a visual representation, especially because it requires special setting and tools. When it could be visualized using multimedia learning application, it could better support their teaching and learners’ understanding.

Having interviewed the teachers, this study interviewed the learners, aimed at gathering their views on the way they expect the application to support their learning. As the aim was general, this study selected between 2 and 5 learners each school (eventually this study managed to interview 32 learners). The interviews were also held in schools, where they study. Based on their feedback, they prefer a web-based application so that they could access the learning content anytime anywhere. They have no idea about how the application will look and feel, but they just need an application that is friendly to them.

Based on the results of the observations and interviews, the researchers concluded that the users need an interactive learning media that provides contents on static liquid (particularly on Pascal law, submarine, regional water company, and principal of Archimedes) for them to access any time anywhere. For this study, the content on the static liquid is taken from the textbook, while the focus is to make the learning media usable for the users. Particularly, the learning media should minimize users’ cognitive load by minimizing exercises.
Based on the requirements, the prototype was designed. Ideas were put on a storyboard (the sample is available in Figure 3). It was used to elicit feedback from the users.

![Figure 3. Sample of the Storyboard](image)

The storyboard was presented to the users in a cyclical process, for them to give their comments and feedback on the design. The sample in Figure 3 is the finalized design, in which they prefer an application with windowing and menu interaction style.

Then, the design was transferred into a working prototype. Flash CS5 was used in making animated representations. Figures 4 through 7 depict some of the snapshots of the learning media.

![Figure 4. Appearance of Law Pascal Application Menu On Hydraulic Pump](image)

Figure 4 displays the learning media with the navigation panel on the left. The background is made plain, to avoid unnecessary mental processing. The topic remains at the top at all time. In Figure 4, when users click the arrow, a window opens and displays a simulation as seen in Figure 5. The process is represented by colors and text in an enlarged size.
Figure 5. Pascal Legal Applications on the Hydraulic Pump

Figure 6 is a submenu display that shows the phenomenon of Archimedes Principle. In the media the student can observe if the object is inserted into the liquid then the weight of the load will decrease as much as the liquid it displaces, by changing the load inserted into the liquid the amount of water that moves will also vary, thus displaying a different appearance.

Figure 6. The Archimedes Principle

Figure 7 is a submenu display that shows the application of Archimedes in everyday life especially on submarines, students can observe and manipulate the conditions of floating submarines and diving.

Figure 7. Applications of Archimedes on submarines
Then, the prototype was tested through expert review, in which walkthrough was performed to determine whether through the designed interface users could easily carry out their tasks or not (Blackmon, Polson, Muneo, & Lewis, 2002). Five experts were involved in the walkthrough sessions. All experts had been teaching in the field of human-computer interaction and research for at least seven years. In addition, projects in the industry were also consulted. The procedure for the walkthrough session is visualized in Figure 8.

![Figure 8. The Walkthrough Procedure](image)

Referring to Figure 8, in the beginning, the experts gathered together and were briefed about the goal of the walkthrough. They were made understood that the walkthrough was aimed at gathering usability issues, particularly on flaws that increase cognitive loads through unnecessary exercises. Then, they were walked through the learning media, guided by specific tasks. The tasks are (1) observe the simulation for Pascal law, (2) observe the simulation for a submarine, (3) observe the simulation for the regional water company, and (4) observe the simulation for the Archimedes Principle. While walking through the learning media, each of the experts noted down all the flaws that they found. They were not allowed to discuss during this walkthrough. Later, in the debriefing session, the experts sat together and discussed what they had found. They brainstormed, and moderated the outcomes. Finally, they handed the outcomes to the researchers of this study.

**RESULTS**

The learning media was developed based on the storyboard that was designed with user intervention. The contents were adopted from the textbook. When experts walked through the learning media, their concern was whether the prototype, through the way it interacts with the users, support the user tasks well. In this paper, the user tasks being evaluated is related to observing the simulations to understand the content.

Having gone through the walkthrough process, the experts found that the learning media is able to deliver the contents. However, the users face certain difficulties in some tasks. Table 1 details these difficulties in the tasks.
Table 1. Excise in the Learning Media

<table>
<thead>
<tr>
<th>Display</th>
<th>Excise and Implication</th>
</tr>
</thead>
</table>
| ![Image](image_url) | **Excise 1.** There is no instruction for the users.  
Implication: When there is no instruction, users have to guess for their action (*can cause cognitive load*). They may make mistakes, or wait for some actions from the learning media (*can lead to stress*).  
*Excise 2.* The arrows have no indication of an active button.  
Implication: When there is no indication, users do not realize that they can be clicked for actions from the learning media, hence, they have to guess and may click on other elements (*can cause cognitive load*).  
*Excise 3.* The objects have no label.  
Implication: When there is no label, users have to guess. Perhaps, users have to find the information from another source (*can cause unnecessary action and cognitive load*).  
*Excise 4.* The lines have no label.  
Implication: There are three lines, with no label, hence users have to guess which one means what... (*can cause cognitive load*).  
*Excise 5.* Does the color (for the objects) contain certain meaning?  
Implication: Users may think the color is part of the effects of the simulated action. Hence, they tend to think of the effect (*can cause cognitive load*).  
*Excise 6.* The arrow does not indicate the strength of the force.  
Implication: Users have no idea, and they have to make some guesses (*can cause cognitive load*). Or they understand differently. |
Excise 7. The objects have no label.
Implication: When there is no label, users have to guess. Perhaps, users have to find the information from another source (can cause cognitive load).

Excise 8. The experiment seems similar to the simple hydraulic system, but has no line.
Implication: Users may wonder in what way the simulation results in (can cause cognitive load).

Excise 9. Objects use a different color than that in the simple hydraulic system.
Implication: Users may think color means something (can cause cognitive load).

Excise 10. The objects have no label.
Implication: When there is no label, users have to guess. Perhaps, users have to find the information from another source (can cause cognitive load).

Excise 11. There is no indication for user tasks.
Implication: Users have to guess their actions (can cause cognitive load).

Excise 12. The objects have no label.
Implication: When there is no label, users have to guess. Perhaps, users have to find the information from another source (can cause cognitive load).

Excise 13. There is no indication for user tasks.
Implication: Users have to guess their actions (can cause cognitive load).

Excise 14. The label is too small.
Implication: Users have to put extra effort into reading the label (can cause cognitive load).
Overall

Excise 15. The simulations lack caption explaining the experiment.

Implication: Users have to rely too much on the visual and audio. The text could strengthen the audio and visual. Hence, without text stating important points, learning could be distorted (could cause cognitive load).

Excise 16. No example in the actual context.

Implication: Users may not be able to associate the experiment with the actual context. Hence, they have to guess, or it creates fear for them to experience the actual situation (could cause frustration).

DISCUSSIONS AND CONCLUSION

Although the learning media has been designed by involving users, and their feedbacks were considered, and signaling principles have been applied, still experts found that users will face difficulties understanding contents from the experiments exhibited in the learning media. Based on their experience while walking through the learning media, they suggest actions in Table 2 to be taken.

Table 2. Recommendations for Improvement

<table>
<thead>
<tr>
<th>Excise and Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excise 1.</strong> There is no instruction for the users. Recommendation: Instructions are placed for every experiment. They have to be step-by-step in the language users familiar most, with a placeholder.</td>
</tr>
<tr>
<td><strong>Excise 2.</strong> The arrows have no indication of an active button. Recommendation: when there are elements users are expected to click, make them noticeable. They have to provide cues, either visual cue or audio cue.</td>
</tr>
<tr>
<td><strong>Excise 3.</strong> The objects have no label. Recommendation: In all experiments, all objects are labeled. The label should not touch the object, and located on a placeholder. For all objects, the label has to be easily read and standardized (color, shape, font size, etc...)</td>
</tr>
<tr>
<td><strong>Excise 4.</strong> The indication of effects and results have no label. Recommendation: All indications of effects and results in all experiments should be labeled/captioned. The labels must be represented differently than the labels for objects. They must be standardized for all experiments.</td>
</tr>
<tr>
<td><strong>Excise 5.</strong> Does the color (for the objects) contain certain meaning? Recommendation: If the use of color is insignificant, use standardized color for all objects.</td>
</tr>
<tr>
<td><strong>Excise 6.</strong> The arrow does not indicate the strength of the force. Recommendation: When there is a force, indicate the strength of the force, in the text.</td>
</tr>
<tr>
<td><strong>Excise 7.</strong> The experiment seems like similar to the simple hydraulic system, but has no line. Recommendation: For all similar experiments, with similar form of effects, use similar representation.</td>
</tr>
<tr>
<td><strong>Excise 8.</strong> Objects use a different color than that in the simple hydraulic system. Recommendation: For all similar procedure of experiments, use similar representations.</td>
</tr>
<tr>
<td><strong>Excise 9.</strong> There is no indication for user tasks. Recommendation: For all experiments, user tasks have to be clearly indicated, such as whether they have to click something, type something, drag somewhere, and etc...</td>
</tr>
<tr>
<td><strong>Excise 10.</strong> The label is too small. Recommendation: When providing text, ensure the text is readable by the users. This implies to color, size, location, contrasts, etc...</td>
</tr>
<tr>
<td><strong>Excise 11.</strong> The simulations lack caption explaining the experiment. Recommendation: On top of audio and visual explanation, text stating main points is necessary. Provide them to enhance memorability.</td>
</tr>
<tr>
<td><strong>Excise 12.</strong> No example in the actual context. Recommendation: Provide video showing how the context being experimented takes place in the real situation.</td>
</tr>
</tbody>
</table>
The results of the walkthrough prove that although an interactive learning media is designed with users’ involvement, it is not guaranteed flaw-free. Designers have to realize that designing learning media has to be carried out in an interdisciplinary team (Preece, Rogers, & Sharp, 2015). In this study, not only content experts were involved, besides learners, but also experts in human-computer interaction.

Involving experts in human-computer interaction is crucial because they could determine the problems users potentially faced when dealing with the learning media. This could not be performed by other people, including the designer. Based on their experience the human-computer interaction experts have user characteristics in mind already, for the context they are using the learning media. As a result, identifying flaws is easy for them.

Other studies like Karajeh, Hamtini, and Hamdi (2016) and Mohd and Shahbodin (2016) also involved experts in their development of interactive products. Basically, they also gathered similar results, that expert evaluation discovers a number of flaws in terms of excise in their interactive products.

All recommendations by the experts are expressed in ensuring users are notified. This is the role of signaling principles. Obviously, signaling principle is important in guiding users while going through the learning media (Austin, 2009). It helps users in many ways. Besides noting users of buttons and menu, it helps to feed reactions back to users, and notifying the status of tasks being carried out. Also, it clarifies format of entry, and availability of something (Amadieu, Marine, & Laimay, 2011). Obviously, it is more powerful when the interactive application is more complex. Anyway, the learning media in this study is simple; hence, the signals it provides to users are limited. It is in line with the goal of the learning media (and any other interactive application), which is to ease user tasks. Hence, unnecessary signaling is totally avoided.

The interactive learning material in this study acknowledges the roles of experts in human-computer interaction. It is strongly emphasized by many gurus (like Preece, Rogers, and Sharp (2015) and Mayhew (1999)) to employ experts for evaluating the interface of the designed prototype before deployment. Based on the recommendations by the experts, this study will take the appropriate actions in improving the interface.

Further, this study intends to carry out a user test after the prototype is improved. Besides expert evaluation, this study believes that user test is also important before the learning media is deployed, as has been carried out by various works previously (Aziz, Roseli, & Mutalib, 2011; Mayer & DaPra, 2012). In fact, it is also strongly emphasized by the experts like Nielsen (1994), Preece, Rogers, and Sharp (2015), Schneiderman, Plaisant, Cohen, Jacobs, Elmqvist, and Diakopoulos (2016).

Regarding signaling principles, designers have to understand that too much signaling is also annoying users (Mayer, Heiser, & Lonn, 2001; Mayer & Fiorella, 2014). It is analogous to a person who tells too much, even in situations where people do not expect any information. When the person keeps telling, and others have to respond to it, it is unnecessary. Hence, providing signals to users should be carefully considered, to ensure important signals are not left unattended, and that no unnecessary signal is loaded.

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OPEN EDUCATIONAL RESOURCES BASED ONLINE TUTORIAL MODEL FOR DEVELOPING CRITICAL THINKING OF HIGHER DISTANCE EDUCATION STUDENTS

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ABSTRACT

This paper aims to develop a prototype of learning for the achievement of critical thinking skills of Higher Distance Education students through the utilization of open educational resources (OER). It is based on a research and development project conducted from September 2013 until April 2014 at Universitas Terbuka (UT), the Indonesia Open University. The research consisted of three stages. The first stage developed the Tutorial Activity Plan (TAP) and the Tutorial Activity Unit (TAU). The second stage developed a prototype online tutorial model along with the initiation materials and tasks. The third stage was a trial implementation of online tutorials using OER. The Online tutorials were a course called Natural Resource Conservation and Environment (NRCE). Data on student learning outcomes on the completion of tasks and discussion activities were collected. Student learning outcomes were based on indicators of Enis's critical thinking skills. Student perceptions toward online tutorial activities were based on the students' assessment of the online tutorial implementation. Data were collected using a questionnaire, tests, document analysis forms, and interviews. The results indicated that critical thinking can be develop through the utilization online tutorial activities. The students utilized OER as reference source when they were engaging in online tutorial tasks and online discussions. Critical thinking skills of the students could be evaluated based on student learning outcomes, e.g. student discussions and answering questions while undertaking online tutorial tasks.

Keywords: Online tutorials, conservation of natural resources, digital teaching materials.

INTRODUCTION

According to a 21st century partnership learning framework, the expertise that humans must have in the 21st century, includes critical thinking skills. Osborn (2007) also included critical thinking skills in his recommendation concerning science education for the 21st century. Critical thinking skills can help students avoid mistakes in connecting new concepts prior to knowledge, so they can prevent misconceptions among students (Kogut, 1996).

Critical thinking skills are also one of the competencies that must be achieved in lectures according to Natural Resources Conservation and Environment (NRCE). The largest sea
area (5.8 million km²) and the largest number of islands (17,508), Indonesia enjoys extraordinary natural resources. The nation is home to 37% of the world's species, 30% of the world's mangroves, and 18% of the world's coral reefs. Its tropical forests act as the lungs of the world (Hertzmark in National Education Standards Body, 2013). However, it has been experiencing slow but systematic natural and environmental degradation. Critical thinking skills are needed in addressing this environmental problem.

UT is one of the distance higher education institutions in Indonesia utilizing the internet to provide services to its students. UT has used Moodle as a Learning Management System (LMS) that supports academic activities including online tutorials for all its courses, with the exception of practical courses. The tutors are qualified lecturers or practitioners from state universities drawn from UT, private universities, relevant business, industries and private sectors. The ability to think critically expected to be owned by both students who study through face to face as well online. According to Risch, Jackson, and Murray (2013), the implementation of Web 2.0 applications on online discussion can improve critical thinking skills. Utilization of discussion board tools (Hibbard, Bellara, and Vermette, 2010) in particular, very useful. Likewise, through science news on the internet, students can increase critical thinking and argumentation skills (Lin, 2013).

OER is a set of teaching/learning materials, residing in the public domain that has been released under an intellectual property license to be used free of charge or adapted by others (UNESCO, 2009). The rapid growth of OER has provided new opportunities for teaching and learning. Digitized OER materials can be offered freely and openly for educators, students and learners to use in teaching, learning and research (Bissell, 2009). Utilization of OER in learning helps enrich lessons. OER can be text, video, audio, images, and more. However, at the time of processing and interpreting various information sources from the internet or any other source, a student must have the ability to select and evaluate them.

CRITICAL THINKING SKILLS

According to Basham et al. (2008) critical thinking is a set of cognitive skills and intellectual dispositions necessary to identify, analyze and evaluate arguments, formulate and present convincing reasons that support conclusions, and to make rational and appropriate decisions. Critical thinking is a reflective and sensible thought that focuses on determining what to believe or do (Ennis, 1985). Sternberg (1986) defines critical thinking as the mental process, strategy, and representation that people use to solve problems, make decisions, and learn new concepts.

Ennis (1996) identified 12 indicators of critical thinking skills that could be grouped into five groups of thinking skills namely:

- Providing a simple explanation: a) focusing questions, b) analyzing arguments, and c) asking and answering questions about an explanation or challenge;
- Building basic: a) considering the credibility of the source, b) observing and considering observations;
- Concluding, which includes: a) making deductions and considering the results of deductions, b) making inductions and considering the results, c) making decisions and considering results;
- Providing further explanation: a) defining terms and considering definitions, b) identifying assumptions; and
- Setting strategies and tactics: a) deciding on an action, and b) interacting with others.

Likewise, Norris and Ennis argue that critical thinking is a sensible and reflective thinking ability that is focused on making decisions about what is done or is believed (Stiggins,
Thinking critically is a thinking mode that is directed to the goal. The goal of critical thinking is to evaluate the best acts or beliefs.

Experts define critical thinking skills as the ability to analyze arguments, claim, and prove a concept or theory based on evidence (Ennis, 1985; Facione, 1990; Halpern, 1998; Paul, 1992); make conclusions by using inductive and deductive abilities (Ennis, 1985; Facione, 1990; Paul, 1992; Willingham, 2007); as well as making decisions or solving problems (Ennis, 1985; Halpern, 1998; Willingham, 2007). Other capabilities or behaviors relevant to critical thinking include asking and answering questions to clarify a problem (Ennis, 1985); defining terms (Ennis, 1985); identifying assumptions (Ennis, 1985; Paul, 1992); interpreting and explaining a concept (Facione, 1990). Factors that can improve students' critical thinking skills in online lectures include online discussions using the four questions proposed by Alexander et.al. (2010), application of Web 2.0 (Risch, Jackson, & Murray, 2013), the use of discussion board tools (Hibbard, Bellara, & Vermette, 2010), and delivering arguments and evaluating science news on the internet (Lin, 2013).

Halpern (1998) developed two learning programs aimed at improving critical thinking skills and student abilities. Use of a general problem-solving strategy, has been found to be of help in increasing students' cognitive development. Students taught with specific problem-solving strategies can demonstrate mental mathematics that are more akin to expert skills. He argues that teaching, "broad-based, interdisciplinary" thinking skills, is the most effective way to teach critical thinking. Critical thinking skills are not a direct focus of learning, but a natural consequence because they are involved with the subject matter (Ennis, 1989).

Case (2005) argues that critical thinking is a tool useful in teaching the content and skills contained in the curriculum. Ennis (1989) suggests that critical thinking skills can be loaded into common components and certain specific components of learning. According to Facione (1990) critical thinking can be taught in the context of specific content, or content taken from "events in everyday life". Paul (1992) recommends training in basic critical thinking skills and which are integrated into specific disciplines. Other researchers recommend the use of certain learning strategies such as explicit teaching, cooperative learning, modeling, and constructivist techniques to foster the development of critical thinking skills and abilities.

OPEN EDUCATIONAL RESOURCES (OER)

Open Educational Resources (OER) consist of digitized materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research. An Open Educational Resource is a learning resource or teacher support material as well as other resources used to ensure the quality of education and educational practices (Johnstone, 2005). According to Kanwar and Uvalic-Trumbic (2011), OER is defined as a source of education that has content licenses in the form of streaming video, paper-based text, video, audio or multimedia computer-based openly available to educators as well as students and designed to support learning activities.

Bissell (2009) notes that Open Educational Resources (OER) represents an international effort to equalize access and opportunity of knowledge and education around the world. OER is a knowledge resource that is in the public domain and can be used for free by anyone. It is offered in digital form freely and openly to anyone to be utilized in the learning process or research. The possibility of loss of property or copyright in OER due to the use or utilization by others may occur. To have ownership, a person or institution may join the Creative Commons and Open Course Ware Consortium. Information and communication technology can be used to make information available since many learning resources such as web portals containing educational materials have already been created. Some characteristics of OER are 1) Free materials, 2) sustainable access to resources, 3) the ability to pursue the topic thoroughly; 4) the ability to learn for personal knowledge or enjoyment; and 5) easy access to materials (Arendt and Shelton, 2009).
OER has at least three elements, 1) the content of learning materials or references, 2) the equipment in software form for the development and delivery of learning resources, and 3) a standard or convention to publish digital open source (D ’Anthony, 2006).

PURPOSE

The overall purpose of this study is to come up with a prototype online tutorial model of NRCE course which can train students’ critical thinking skills by using open educational resource. Specifically, it aims to (1) develop the kit containing online tutorial materials for the course of NRCE utilizing open education resource (OER), including utilizing OER as additional learning material and resource of discussion; (2) analyze implementation of the online tutorial developed utilizing OER by identifying (a) the number participation of the students, (b) the utilization of OER in online tutorial, (c) achievement of students’ critical thinking, and (d) student perceptions toward implementation of OER based online tutorial.

METHODOLOGY

The method employed is a research and development by using qualitative-quantitative approach and was conducted between October 2013 and April 2014. We developed and validated the products used in learning (Borg and Gall, 1989). The study was conducted in three (3) stages. The first stage consisted of a preliminary study made up of a subject competency analysis, the development of an Activity Tutorial, a Tutorial Unit and an analysis of bibliography sources. The second phase consisted of prototype development of the online tutorial model, which included the development of initiation materials and tasks to trigger library searching through OER, the development of student guidance in using OER, preparation of the Learning Management System (LMS) platform in accordance with online tutorial design, and an expert evaluation of prototype model. The third stage of consisted of the implementation of online tutorials by utilizing materials that have been developed and formative evaluation of learning models that have been developed.

The course selected, Natural Resource Conservation and Environment (NRCE), focused on the fast changing global environment needed in-depth analyses and learning. The data collection techniques used included documentation, questionnaires, tests, and interviews. The data were analyzed using qualitative and descriptive approach. The kit of online tutorial material was developed through literature review of some OERs. Content validity of the tutorial kit was established on the basis of expert reviews, the on tutorial activity plan (TAP), the tutorial activity unit (TAU), the online tutorial materials and tasks, and a literature review. In online tutorial activities, the students were given the resource addresses or sometimes not even given any addresses so that they can search for them directly. During discussions, the students were also given assignments. They could search for the answers refer to OER.

Formative evaluation of the implementation of online tutorials was obtained through a questionnaire. Questions used in the questionnaire included access to articles through open education resources, ease in analyzing readings, online interaction skills, and collaborative skills in building discussions. Student learning outcomes are usually based on competency achievement that indicate critical thinking ability. The Ennis indicator was used to assess critical thinking ability. Students’ answers were determined evaluated based on the achievement of a predetermined competency in accordance with the “marking scheme”. All data were analyzed descriptively qualitative.
PRESENTATION OF THE RESULTS

Development of Online Tutorial Materials Utilizing Open Education Resource (OER)

Development of Tutorial Activity Plan (TAP) and Tutorial Activity Unit (TAU) Utilizing OER

The design of an online tutorial model through OER utilization begins with the development of the TAP and TAUs. A TAP is a design of tutorial activities that will be implemented for one semester / period of online tutorial. TAUs represent the implementations from TAP; they contain tutorial event units to be used during weekly online tutorial meeting. The TAP and the TAUs contain competencies that should be achieved by students after participating in online tutorials. For each course, one TAP, 8 TAUs, 8 material initiations, and 3 assignments were developed. All these used as references in developing the prototype of the OER based online learning model for the Conservation of Natural Resources and Environment (NRCE) course.

The TAP and TAUs prepared for NRCE online tutorial were adapted from several existing TAP and TAUs for NRCE face-to-face tutorials. As for the TAP, the learning resource columns were filled by the subject material, reference books and OER. OER includes videos as well as website address. Each TAP included the general and special goals of the online tutorial, time allocation, learning resource / media and the details of online tutorial activities performed during preliminary, core, and closing activities. The main subject references and OER was listed in the learning resource/media of TAP.

Utilization of OER as Additional Learning Material and Resource of Discussion

During online tutorial activities, tutors utilize open educational resources (OERs) in addition to the basic learning material as teaching materials. The utilization of OER as learning material is usually done in the fifth and sixth weeks. In the previous weeks, tutors provided material that could be classified as basic learning materials. However, tutors encouraged students to seek other learning resources as an enrichment from OER during discussion or tutorial assignment. The utilization of OER as learning material during online tutorial as clearly show in Table 1.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Utilization of OER as Additional Learning Material</th>
<th>Learning Resources for the Discussion</th>
<th>Learning Resources for the Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic principle of Conservation and Natural Resource and Environment</td>
<td>available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Conservation of water resources</td>
<td>available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conservation of land resources</td>
<td>available</td>
<td>available</td>
<td>available</td>
</tr>
<tr>
<td>4</td>
<td>Conservation of air resources</td>
<td>available</td>
<td>available</td>
<td>available</td>
</tr>
<tr>
<td>5</td>
<td>Conservation of energy resources</td>
<td>available</td>
<td>available</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Conservation of energy resources</td>
<td>available</td>
<td>available</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Factors influencing conservation and natural resources</td>
<td>available</td>
<td>available</td>
<td>available</td>
</tr>
<tr>
<td>8</td>
<td>Factors influencing conservation and natural resources</td>
<td>available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Implementation of the online Tutorial Utilizing Open Education Resource (OER)

The Number of Participation

Out of the 124 students registered to the NRCE course, 33% registered as online tutorial students. As many as 28 students activated and accessed online tutorials. The details are presented in Figure 1.

![Figure 1. Number of Students Completing Online Registration and Remained Active at Each Regional Office (RO)](image1)

The Students who had actively accessed the online tutorial were spread across 15 regional offices (RO). The students who did so most actively were from Purwokerto RO. The number of students participating in the online tutorial varies for each activity. Out of 28 students, there are 82%, 79%, 64%, 68%, 54%, and 43% students who involved in discussion forum 1, 2, 3, 4, 5, and 6 (Figure 4.3). Furthermore, 64%, 82%, and 71% of the students had submitted assignments at online tutorial assignments 1, 2 and 3. It clearly show at Figure 2 below.

![Figure 2. The Number of Students Getting Involved at Every Discussion Forum](image2)
The Utility of OER at Online Tutorial

While answering assignment and participating on discussion, the students had already utilized OER besides other resources. About 60% students utilized OER. However, when the student’s answers were analyzed more deeply, it was found that most students had copied the original resource directly. They did not paraphrase the original resources, and did not change the sentences, so the student’s answers become too long and wordy. This feature needs attention. Furthermore, in the discussion forums, 48% students give their opinion or answer based on OER. The rest of them, had used the main learning materials (26%) and school books (16%).

Students’ Critical Thinking Achievement at Online Tutorials

Students’ critical thinking achievement in the online tutorial was measured through Tasks. Critical thinking of students was reflected by the answers given by the students. Out of the 12 sub-indicators of critical thinking, four (4) measured through the tutorial assignment, e.g., the sub indicator of considering credibility (source criteria), analyzing argumentation, answering clarification and challenging questions, deciding an action, and identifying assumptions. The abilities of the students were assessed by considering credibility (source criteria) at a high level. Students’ ability in analyzing arguments at very high level category. The ability of students in deciding an action at high level category, and the ability of students in identifying assumptions at medium level category. Details are in Table 2 below.

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>Sub indicator</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Building basic skills</td>
<td>Consider the credibility (source criteria)</td>
<td>74.13</td>
</tr>
<tr>
<td>2</td>
<td>Providing a simple</td>
<td>Analyze the argument</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>explanation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Asking and answering clarifying and challenging questions</td>
<td>94</td>
</tr>
<tr>
<td>4</td>
<td>Setting strategies and</td>
<td>Decide on an action</td>
<td>77.5</td>
</tr>
<tr>
<td></td>
<td>tactics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>80.7</td>
</tr>
</tbody>
</table>

The result shows that students’ critical thinking skills were of high order. They were strong in providing simple explanations particularly while analyzing the arguments and asking and answering clarifying and challenging questions. However, we cannot see other indicators of critical thinking. It means the tutor of this course needed to refine his/her skills of critical thinking.
Student Perceptions on the Implementation of OER Based Online Tutorial

Student opinions on the implementation of OER based online tutorial were collected at the end of each online tutorial. Fifteen students returned the questionnaires. The results from the analysis of the data are presented in Table 3.

Table 3. Students' Opinion on the Implementation of OER Based Online Tutorial

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  The materials are interesting</td>
<td>38</td>
<td>54</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2  The materials challenge the students to find other resources from OER</td>
<td>69</td>
<td>31</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3  The materials help students to express scientific ideas.</td>
<td>46</td>
<td>54</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4  The materials could improve skills in finding and validating information sources.</td>
<td>54</td>
<td>38</td>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

Thirty-eight percent students strongly agreed, 54% agreed, and 8% students strongly disagreed that the materials used in the online tutorial were interesting. Sixty-nine percent students strongly agreed and 31% students just agreed that the materials had challenged them to find other resources from OER. They found them to be relevant to critical thinking skills, that is, answering clarifying and challenging questions. Forty-six percent students strongly agreed and 54% students agreed that the materials helped them practice expressing scientific ideas. This is relevant from the view point of developing critical thinking skills, i.e., analyzing the arguments, considering the credibility (source criteria), and deciding on actions. Fifty-four percent students strongly agreed, 38% agreed, and 8% disagreed that the materials could indeed improve their skills in finding and validating information sources.

DISCUSSION

This paper has utilized OER as an open source to conduct online tutorials for NRCE course. OER was utilized by tutors as learning resources / materials while students used OER as a reference in answering the assignment and discussions from the first to the last of the online tutorials. This is in line with the OER practice of including learning resources, resources to support teachers, and resources to assure the quality of education and educational practices (Johnstone, 2005). There are many learning resources available on the internet that can be accessed freely. However, a person or institution needs to join the Creative Commons and Open Course Ware Consortium to save and own their work (Bissel, 2009).

The number of students participating was determine on the basis of questionnaires that had been filled out by students. The students explicitly stated that the resources were provided to complete the online tutorials of NRCE. As for the resources used, 77% said that it was the internet, 69% said BMP/modules, 54% mention other books, 15% said it was the TV, and 15% identified them to be from the newspapers. Clearly, OER was the dominant source. Unfortunately, many of the students could not take advantage of OER because of difficulties with composing answers in their own language by referring to OER. This suggested that there was much room for improvement in the utilization of OER as a learning resource in Indonesia. Tutors can deliver OER material beside BMP material, as enrichment material to students on every tutorial. Actually there are many other OERs that can be added to this online tutorial, either OER produced by UT itself (in the form of enrichment material) or other materials taken from other websites. The OER material that can be uploaded by.
Lecturers or tutors, during active interactions in discussions to support learning (Maboe, 2016). Students who work on group projects together, peer review of their articles, interact in discussion forums, tend to feel more involved in learning (Dixson, 2010). Tutors should consider content and tasks that encourage students to interact with each other. Tutors need to explain the requirements and benefits of interacting. It is not enough to just set up facilities for discussion, for example, by placing announcements on the homepage, e-mails to students, discussion forums in which the instructor interacts, and online lectures or connect sessions and chats, to enhance engagement (Dixson, 2010). The university should teach students how to use online interactive tools to facilitate their teaching and learning, and consider providing intensive mentoring to enable them to utilize the available technologies efficiently (Maboe, 2016).

Learning and teaching approaches that utilize learning by sharing, networking, defining and redefining should be useful. The use of OER is expected to increase the quantity, quality and effectiveness of teaching and learning (Creelman & Ossiannilsson, 2011). Some instructors do not use OER because (a) they are unaware of copyright issues related to OER implementation, (b) could not find OER relevant to their curricula or their context, or (c) were suspicious of the quality of OER and materials from the internet in general (Mtebe & Raisamo, 2014). Therefore, tutors should be encouraged to be self-reliant in managing all aspects, including the relevant OER. There is a need to be confident about OER standards or quality criteria selected and used (Creelman & Ossiannilsson, 2011). One must be sensitive to the legal aspects of each OER used. Therefore, institutions need to prepare clear guidelines so that OERs can be exploited widely, not too carefully but still not against the law. There is an urgent need for university to create awareness of copyright issues in order to enable instructors to adopt OER and share their resources via the internet (Mtebe & Raisamo, 2014).

In the tutorial for the NRCE course, there was not about what students should be referring to answering questions or discussions. The student could actually select the right material and was trusted (valid) performing the tasks. This was in line with Bissell's (2009) opinion that the digitized OER material can be offered freely and open to educators, students and learners to use in teaching, learning and research. OER offers the following benefits (a) expanding access to learning for all, including non-traditional student groups and people from disadvantaged backgrounds, resulting in widening participation in higher education, (b) providing an efficient way to promote lifelong learning by bridging the separation between non-formal, informal and formal learning, (c) acting as an asset to expand education in developing countries, and (d) offering dramatically new approaches to sharing knowledge that can lead to the economic success of individuals, communities, corporations, and, ultimately, across countries (McDowell, 2010).

Consider now the ability of students to consider credibility (source criteria) and analyze arguments at a high level. It should be remembered that there are differences between the ability of students in deciding an action at a high level category, and the ability of students in identifying assumptions at a medium level. Our results have shown that the critical thinking skills of the students examined were high. The students were quite strong in coming up with a simple explanation particularly with regard to analyzing the arguments and asking and answering clarifying and challenging questions. However, we could not detect other indicators of critical thinking. This meant that tutors of this course should practice other skills of critical thinking. Student attitudes are an important factor in ensuring that they stay engaged with online programs. Attitudes towards the online learning environment also contribute to the value of student participation. In short, student attitudes need to be taken into consideration in designing online learning (Dahalan, Hassan, & Atan, 2012).
Most students involved in this study considered that the materials of online tutorial were interesting and suitable for practicing expression of scientific ideas, and agreed that they can help them improve their skills in finding and validating information sources. Moreover most of them perceived that the materials challenge the students to find other resources from OER. This perception was relevant to critical thinking skills, that is, answering clarifying and challenging questions, analyzing the arguments, considering the credibility (source criteria), and deciding on an actions.

CONCLUSION & RECOMMENDATION

The development of our model had begun with developing an Online Tutorial Activity Plan and an Online Tutorials Activity Unit by utilizing OER as an additional source of student learning in addition to the Essentials Book as the main source of reading. OER were used in initiation materials, discussion materials and online tutorial task. The results showed that in the online tutorial of NRCE have been able to utilize OER as a learning resource. The students found that the materials helped respond to the discussion material and answer while performing the online tutorial tasks. However, not all students were active or maximal while utilizing OER. This was apparent from the ability of students in selecting reference materials and student learning outcomes. According to indicators of critical thinking ability to analyze, evaluate, and communicate or explain based on the results of this evaluation, 70% correct. However, some students had not been able to give correct referral addresses and to select the material correctly, therefore could not be trusted (invalid). The results of this study have illustrated that online tutorial activities need to be designed by preparing the proper presentation and place the students at the center as learners. The spread of students across different regions (distance learning) suggest that there will be a variation in the ability of students to use their computer and networking tools, as well as the skills of choosing the right site to get reliable reference materials. This means that online tutorial activities need to be developed always by paying attention to the affordability of students to get access to reading materials and keep abreast of the development of science and technology. Online tutorial activities supported by OER have been responded well by the students. The data of this research meet the purpose of this study.

The main limitations of study basically in the number of respondents and the methods used to activate students. Still the study has suggested, this online tutorial model could be implemented for other courses. However, there should be guidelines for the tutors that can direct students in using the right OER for the purpose/competence of the course to be achieved. Students can use OER as an additional source of reading from the main material provided by the tutors of study program. The tutor should diligently monitor student activities in online tutorial process, particularly for some students who are not yet accustomed to using the computer and network, so that the tutors are able to assist and solve the students’ problems. However, this research can indeed be refined through further research, particularly with regard to developing methods used for activating students. There is also room for researches examining how to develop other 21st century skills such as creativity, innovation, collaboration and communication.

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ABSTRACT

Existing guidelines, standards, and frameworks for addressing quality of online courses often highlight the importance of setting up effective systems to support faculty in overcoming the emerging challenges they face in design and delivery of these courses. However, not much information is available in literature on the means of tackling these difficulties, which are ever evolving in line with the dynamic nature of learning technologies and mode of teaching and learning in virtual environments. This qualitative study sought to identify these challenges and emerging solutions. Data was collected using interviews with academic administrators and faculty experienced in design and delivery of online courses and programs. As a result, several themes emerged, among them the need for an academic institution to dynamically adapt its mission and culture to the evolving nature of online teaching and learning. Other emergent challenges and suggested solutions are discussed.

Keywords: Faculty support, online learning, distance education, e-learning.

INTRODUCTION

As online education continues to grow in higher education institutions (HEIs) (Allen & Seaman, 2017; Jung, Wong, Chen, Baigaltugs, & Belawati, 2011), faculty in HEIs are increasingly under pressure to teach online (Kim & Bonk, 2006; Hunt, Davis, Richardson, Hammock, Akins & Russ, 2014). This is despite the fact that online education is a fairly recent mode of instruction delivery, and majority of HEI faculty have little or no experience either as students in online education or as instructors of online courses.

Faculty play crucial roles in planning, design and delivery of online courses. However, anecdotal evidence indicates that HEIs often require faculty to offer online courses without providing them with the skills and knowledge necessary to be successful online instructors. Weaver, Robbie & Borland (2008) noted that with increased offering of online courses, faculty are often required to utilize pedagogical and technological skills that they may not necessarily possess. According to Berge (1995), online instructors perform pedagogical, social, managerial, and technical roles through which they are able to create learning environments where students can actively learn using higher-order thinking skills. Liu, Bonk, Magjuka, Lee, and Su (2005) discussed other critical roles that faculty play in design and delivery of online courses. Lack of skills and knowledge necessary to play these roles might pose a challenge for online course quality since many faculty may "teach as they were taught, in traditional classrooms with teacher-centered strategies dominated by lecture and discussion” (Taylor & McQuiggan, 2008, p. 30), and, therefore, online learning environments may tend to be imitations of traditional face to face courses (Twigg, 2001). Furthermore, since online courses differ in character from traditional courses (Jung, 2010; Jung, 2008; Stella & Gnanam, 2004), faculty who offer online courses might face challenges that arise from the virtual nature of the environment in which they deliver instruction,
unique from those they could experience while teaching similar on-campus courses. It therefore, becomes increasingly important to offer faculty the support they require, in order to deliver quality online courses and programs (Baran & Correia, 2014).

Extant standards and frameworks for evaluating online courses often include faculty support as a key measure of course quality. In a review of thirteen paradigms for evaluating online learning, Shelton (2011) found that faculty support was a recurring theme for indicating quality. Daniel and Uvalic-Trumbic (2013) reviewed standards for quality online learning and found that faculty support is identified as critical for successful online teaching. Similarly, Martin, Polly, Jokiaho and May (2017) in their review of twelve standards for online learning used in different countries, also found that faculty support was considered as a key indicator of quality online learning in a majority of the standards. Recent studies such as (Baran & Correia, 2014) and Martin and Parker (2014) suggested that faculty support plays a key role in ensuring high standards of online teaching and learning. Other studies have indicated that administrators of HEIs acknowledge the necessity of providing support to faculty offering online courses (Sellani & Harrington, 2002; Garza, 2009; Orr, Williams & Pennington, 2009).

Even though HEIs offering online education might have some form of faculty support mechanisms, not much information is available on how such systems adapt to the emerging fundamental challenges faced by faculty in design and delivery of online courses. Due to the dynamic nature of online courses (Garza-Mitchell, 2010; Shelton, 2011), it is plausible to assume that challenges that faculty face in designing and delivering online courses are also evolving. For example, there are increasingly newer and improving technologies that could be used to engage learners in meaningful learning activities in online learning environments (Dabbagh, & Bannan-Ritland, 2005; Ko & Rossen, 2010). A recent phenomenon such as use of learning analytics has been suggested as a good way to improve the design and delivery of instruction to make it more meaningful (Martin & Ndoye, 2016). Studies by Clark, Tanner-Smith & Killingsworth (2016) and Merchant et al (2014) have indicated that emerging technologies such as simulations and virtual worlds could be used effectively to enhance the levels of learner motivation and engagement. However, for such emerging technologies to be brought to the attention of faculty and to be meaningfully utilized in delivery of quality online instruction, faculty should be offered the necessary technological and pedagogical support. Support is especially critical for faculty with little or no experience with online teaching (Hunt, Davis, Richardson, Hammock, Akins & Russ, 2014). Previous studies have highlighted the fact that often, challenges faced by faculty in use of fast evolving learning technologies is a key hindrance to quality online teaching and learning (Bolliger & Wasilik, 2009; Lieblein, 2000; Hunt, Davis, Richardson, Hammock, Akins & Russ, 2014).

Friendman (2017) and Smith (2014) have indicated that online education is likely to make even bigger changes in the foreseeable future, which might impact the way online courses are taught and likely begging for enhanced faculty support. Friendman (2017) identified the following as the likely trends that stakeholders in online education need to watch: 1) greater emphasis on nontraditional credentials; 2) Increased use of big data to measure student performance; 3) Greater incorporation of artificial intelligence into classes; 4) Growth of nonprofit online programs; and 5) Online degrees in surprising and specialized disciplines. Smith (2014) identified the following trends in online learning: 1) big data; 2) gamification; 3) personalization; 4) mobile learning; 5) focus on return on investment; 6) Application Programming Interfaces (APIs); 7) automation; 8) augmented learning; 9) corporate MOOCs; and 10) rise of cloud Learning Management Systems (LMS). Dynamism in online learning suggests that the nature of challenges that faculty face in design and delivery of online courses change with time.

If online course quality is to be achieved and maintained, faculty need to keep themselves updated with the dynamic nature of online learning and emerging learning technologies, whilst efforts are made to address, in a timely fashion, challenges that they encounter in doing so.
It is unclear whether or not HEIs continually engage faculty to identify the difficulties they could be facing as they design and deliver online courses. One might arguably contend that proactively identifying and providing the necessary support or remedies to the challenges that faculty face in this respect, is crucial, not only in maintaining the relevance of faculty support systems, but in possibly improving the quality of online courses. Few studies have examined the challenges that faculty face in design and delivery of online courses, as they make efforts to keep pace with the changing nature of online education.

The purpose of this study was to identify the main challenges that faculty perceived that they faced in their efforts to design and deliver quality online courses, and to highlight some proposed solutions. Specifically, the study sought to answer the following research questions:

- What challenges do faculty perceive that they face in their efforts to design and deliver quality online courses in a rapidly changing online learning environment?
- What recommendations could be given to administrators of HEIs and online program administrators to confront the challenges faced by faculty in design and delivery of quality online courses?

**RESEARCH METHOD**

According to Creswell (2007), naturalistic modes of inquiry allow the researcher to establish details of an issue by talking directly with those who can provide required information to better understand the context in which the issue under investigation renders itself, and how participants address it. We considered in-depth, one-on-one interviews with participants to be most appropriate in allowing us to acquire a deep understanding of the challenges that participants encounter in the process of designing and delivering purely online courses. In the study context from which participants were drawn, online instructors mainly design and deliver their own courses even though instructional system designers are freely available to offer support. Using qualitative methods also allowed us to be open to themes emerging from data.

Participants in this study were faculty and academic administrators. We considered it fitting to include academic administrators because they were directly involved in providing solutions to issues related to online instruction. Faculty participants were drawn from the College of Education of one campus of a multi-campus research intensive university in Midwestern U.S. The university is accredited by the North Central Association of Colleges and Schools - the Higher Learning Commission (NCA - HLC), which is recognized by the Council for Higher Education Accreditation (CHEA) and the U.S. Department of Education. This college was selected as the study context because it had offered more online courses than most other colleges at the institution, and over a longer period. It was among the colleges that started offering online courses and programs from the time they were introduced at the institution over thirty years earlier. The College was the first in the university to offer a fully online master’s program, and offered among the highest number of continuing and distance programs in the university.

We invited the study participants through letters approved by the university’s Institutional Review Board (IRB). A total of five academic administrators (who will henceforth be identified as A1, A2, A3, A4, and A5), five faculty members (identified in this study as F1, F2, F3, F4, and F5) participated in the study. Only faculty who had taught fully online courses for at least two academic years were selected to participate.

We invited one of the most senior academic administrators, who by virtue of his position, was expected to have ‘rich information’ on the topic of inquiry, to participate in the study. Subsequently, in order to access other academic administrators who had relevant information, we used the snowball sampling strategy. According to Miles and Huberman
(1994), snowball sampling “identifies cases of interest from people who know people who know what cases are information rich” (p.28). In this case, the senior academic administrator proposed all the other four administrators who participated in the study.

**Participant Profiles**

One male and four female academic administrators participated in this study. One was aged between forty and forty nine years, three were aged between fifty and fifty nine, and one declined to reveal her age range. All had doctorate degrees. Four had over ten years of academic administrative and leadership experience while one had between five and ten years. Also, four had over ten years of teaching experience in higher education while one had between five and ten years. Two had over ten years of teaching experience at the institution where this study was conducted, two had less than five years, while one had between five and ten years of teaching at the same institution. All administrator participants indicated that they had taught less than five fully online courses in higher education and three had not taken any online courses at all, while two had taken no more than five online courses, while they were students. Three considered themselves to have intermediate IT skills while two considered themselves to have expert IT skills. However, all administrator participants indicated that they had over five years of experience in handling faculty matters related to online courses and programs.

Four female and one male members of faculty at the College of Education participated in the study. All were doctorate degree holders, with one of them aged between forty and forty nine years, three aged between fifty and fifty nine, and one aged over sixty. Four were tenured and one was not-tenured. Four had over ten years of teaching experience in higher education and one had between five years and ten years. Three had over ten years teaching experience at the institution where this study was conducted while two had between five and ten years of teaching in the same institution. Two had taught over five while three had taught less than five different fully online courses. None of them ever took a fully online course as students, and none got any technical or pedagogical training related to online teaching. Three considered themselves to have intermediate level of IT skills while two considered themselves as experts in IT matters. Between them, two of the faculty participants had won several teaching awards or recognitions, including Excellence in Teaching with Technology award, Graduate Instructor of the Year award, and Graduate Mentor of the Year award. Also, these same two faculty had been nominated in a number of other past years for the Excellence in Teaching with Technology award.

**Data Collection**

One-on-one, in-depth interview with each participant and a demographic questionnaire formed the primary mode of data collection. Each administrator participant was asked to articulate in detail what they perceived to be the challenges that faculty face in design and delivery of online courses. Faculty participants were asked the same question, but requested to draw from their own experiences. All participants were then invited to suggest solutions to the challenges identified and strategies of further enhancing the quality of online courses at the university.

In order to ensure consistency, one researcher interviewed all participants. Before commencement of the interviews, participants were asked to show acceptance to participate in the study by signing a consent form approved by the IRB. Participants did not have access to interview questions prior to the interview. Each interview was conducted at a time and place convenient to the participant and lasted about one hour. Interviews were audio recorded using two recording devices as a data backup strategy. The interviewer also took hand-written notes during the interviews for the same reason. Each interview was then transcribed. In order to protect participant identity, each participant was referred to using a pseudonym in the interview transcriptions and the hand-written notes. The interview recordings were stored in a secured computer and in secured storage locations in the researcher’s home office.
The interview protocol was piloted by first requesting an experienced online education researcher to review the interview protocol and the demographic questionnaire for meanings and clarity. Next, three potential participants (one academic administrator and two faculty) were recruited purely based on convenience sampling, to participate in the pilot study. Doing this enabled the researcher to check for and ensure general understandability of the interview protocol and the demographic questionnaire. Only faculty who had taught fully online courses for at least two academic years participated in the pilot study.

**Data Analysis**

Data were examined at the individual participant level in order to identify patterns and major themes. The researcher and an experienced online education researcher first participated independently in data analysis. In order to identify themes, each of the two researchers went through all the ten data transcriptions and sorted out the content into piles of related topics using MAXQDA software. The two then compared the common challenges emerging from data and agreed to list as ‘major’ those that were mentioned and discussed by four or more participants. These major emerging challenges were then grouped into three themes discussed below.

In order to enhance the trustworthiness of the qualitative inquiry method used in this study, peer-review, member checking and detailed description of findings were employed (Lincoln and Guba, 1985). As explained earlier, the interview protocol and demographic questionnaire were peer reviewed and the study piloted. The researcher also sought the views of two participants – one faculty and one administrator - on the credibility of the findings and interpretations of the results. Further, participant quotes were used extensively to support and explain emergent themes. In this study, the researcher made efforts to remain as objective as possible throughout the research process and to let the data “speak for itself” without trying to fit it within his knowledge and experiences. Participant quotations were included in order to explain the findings.

**RESULTS**

In this study, we sought to identify the challenges that faculty face in their efforts to design and deliver quality online courses, and suggested solutions for overcoming these challenges. We compiled and analyzed responses for common emergent themes. The main challenges that emerged could be broadly grouped into three themes: 1) Proximity to learners, 2) teaching load, and 3) faculty support. The following table shows each of these themes and the challenges grouped under it.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Attributes (Faculty challenges)</th>
</tr>
</thead>
</table>
| Proximity to learners| • Limited opportunities for understanding learners  
                          • Difficulties in observing and assessing practical                                           |
| Teaching load        | • Teaching online is time-intensive  
                          • Perceived negative impact of large online classes                                           |
| Faculty support      | • High level of support in course design  
                          • Limitations of course management systems  
                          • Challenges in keeping updated with technology  
                          • Limited opportunities for information sharing  
                          • Inadequate funding and processes of technology acquisition |
**Proximity to Learners**

Faculty participants expressed the challenges brought about by distance between them and their students. In particular, they discussed the difficulties that virtual environments may present in understanding learners and their learning needs, and in observing and assessing the practical application of knowledge gained in an online course.

**Limited Opportunities for Understanding Learners**

Faculty expressed the view that in purely online courses, the distance between the instructor and learners limits the opportunities for forming connections and building relationships that facilitate effective interactions that are necessary for deeper understanding of the learners and their learning needs. According to some faculty, lack of face-to-face contact in online learning environments (OLEs) leads to faculty-learner relationships that are somewhat “abstract”, making it difficult to know when students do not understand concepts. Consequently, it is often challenging for them to understand learners and their learning needs in order to provide timely interventions to poor performers. This is illustrated in the following sample quotations:

> "...it is very difficult to know your students without opportunities for personalized experiences. I am not saying just face-to-face, but you know your students only in a relationship.....they may provide some blogs about themselves, they may provide photos, but other than that it is just turning in assignments, or participating in discussions. These are all kind of abstract... you do not have the close knowledge of knowing the student as a person.... [F1]"

> "...one challenge is that you have to trust students to know when they don’t understand. In a face to face class, you can see the puzzled looks on their faces. And so I think for students who are struggling, it’s harder to remediate; it’s harder to do that when you’re not in the same room [F4]."

One of the faculty participants (F3) introduced a compounding angle to this argument, claiming that even when students are clear on the areas they don’t understand or issues they need clarification about, some of them have misgivings about posting their questions online. She argued that some students find it difficult to post on a learning management system (LMS) or other online applications, questions that they would easily ask the course instructor or another student in a face-to-face setting. She said:

> *Because the course is online, people are going to be a more reluctant to seek help after having a hard time understanding the core material. Because there is no that person that they met in class to whom they can say: "hey, can you help me?" .....it is much more embarrassing I think for some to reach out. Having to write on the course system, "hey, I don’t understand this". Because then it is permanent. If I just say something to you in the hall way: "hi, XYZ (name) are you too busy?" There is something I do not know…. It is gone. There is no written record of it. You care enough not to tell somebody else about it, but if I write it, it is permanent in digital space. I think that is what makes a lot of students reluctant to write on message boards. Some people really like the message boards because they know what to write. Other people are like, "oh men, what if I say something and it is stupid? It remains there forever you know....”*  

[F3]

Like F4, F2 explained the importance of visual cues saying that when he first started teaching online, he felt disconnected from students because he did not get immediate feedback in form of facial expressions, which he got from students in on-campus courses. He stated:
...at the beginning I was very uncomfortable not having immediate feedback. Nonverbal or verbal feedback from the students.... with my training in psychology you use visual cues all the time. So to not have that in your instruction was certainly ... it felt disconnected from the students. [F2]

Difficulties in Observing and Assessing Practical Application of Knowledge
A faculty participant, who said she taught both a purely online section and an on-campus section of a course in a program that trains special education teachers, explained the challenges she faced in assessing performance of practical skills. She indicated that she found it difficult to assess how well her online students had mastered critical skills necessary in handling students with special needs. She indicated that she was unable to observe how her online students practically applied the knowledge they have gained. She said:

...one of the challenges isn't necessarily with the course itself. But, with the students I have on campus, I can see them practice with children with special needs. So I can watch them perform, and I can know: Oh, they do not understand this because they're not doing it with a sixteen month old. So I need to revisit that. I don't get to do that in the online program..... because the content, I mean, it's a practice content. How is it being applied in the field? Which is what we really care about, and I don't have access to that for students who are around the world [online students].....[F5]

Teaching Load
A common theme among faculty participants was that teaching online is time intensive and that the situation gets worse when the number of students is relatively high.

Teaching Online is Time-Intensive
While not undermining the amount of planning and preparation required for effective teaching in any format, majority of the participants were of the opinion that the process of designing and delivering a quality online course requires diligence and good planning in more processes than are normally necessary for a similar face-to-face course. For example, participants frequently brought up the issue of the amount of time taken up communicating to learners. Online learners often have more channels to interact with their instructor such as email, instant messaging, chats, blogs, discussion boards, and online conference meetings. While faculty appreciated this as part of their work, some of them admitted that sometimes the volume of communication requiring their attention often felt like it was 'invading their life’. F2 explained it as follows:

....there is this issue, how do you put boundaries on that course so that it’s not invading your life all the time? When it’s an online course you can do it whenever ......, you can be involved in the course whenever you want. If I have a course from nine to ten on Tuesdays that I teach face to face, that’s when I teach. I’m done. But, you know, it could be ten at night or six in the morning and I could get online and be involved in the course. So how do I put boundaries around it?

F2 also remarked that faculty often face dilemma in judging the levels of interaction with students “that allows the student to see that they’re good value as well. That they’re not just being taught by the other students.”

A majority of faculty interviewed indicated that they mainly assessed their online students through multiple course projects and discussions. They were of the view that grading those projects, providing personalized feedback, participating in discussions, as well as
responding to communication from learners was often overwhelming to them, since it was mainly text based. This is exemplified by the following comment by F1:

In project based courses like the ones I teach, you generally have multiple projects that must be turned in and responded to with feedback. That quantity, call it grading, call it feedback, whatever, that quantity is enormous in online courses because all your evaluations is coming through either products that are submitted or participation and discussion. It is much more time consuming than just sitting and watching a group process, in face-to-face class. You have to monitor and grade participation and discussion. You have to go back through artifacts and review, provide feedback, understand, and respond to students’ questions about what you said. Very, very time consuming...

F3 also felt that online teaching is a lot more work and requires faculty to spare extra time to organize their courses, than in traditional teaching, if they are to be successful as online instructors:

Online teaching is a lot more work. It’s different and more work than an on campus course. Because it’s constant. You have to be very organized as an instructor, because you get emails all day long, every day. It’s not like an on-campus course, where you see your students once a week. You hear from them all the time [in an online course]. For really minor things. ....and so, you can either be active twenty four hours every day, or learn how to pace yourself. It’s a lot of work [F3].

Perceived Negative Impact of Large Online Classes
Faculty expressed the view that the number of students in an online course is negatively related to elements such as the frequency and quality of interactions and feedback; and, the ability to form relationships between the instructor and students, and, between students themselves. Respondents also indicated that an increase in class size increases the instructors teaching load more in online courses, than the same increase of class size in a similar on-campus course. While participants generally agreed that it is more difficult to ensure quality in large classes regardless of whether they were online or not, they indicated that large online classes present challenges that might be there only in lesser degree in a similar large on-campus course. Large online classes also make the challenge of creating personalized experiences for learners much worse. Here are some comments from faculty F3 and F1 relating to the perceived impact of class size on the quality of an online course:

...the challenge for me is with the university. They keep upping the cap. You know, increasing the number of students that can be in a course. If you want a quality course, from teaching, you shouldn’t have more than 15 students in a course [in her discipline] ...and, right now, I know people with, you know, thirty students in an online course, and it’s horrible. That’s when you start to get difficulties keeping pace on discussion boards, and the teacher doesn’t check in, and students don’t get feedback on their work. That is not a quality course. And part of that is, it’s hard to keep track of more than thirty students in an online course [F3].

...a real concern I have is the size of online courses. The number of students that they would like to load into that.... if you were teaching a face-to-face graduate course on campus, you might have 15 students and you can easily know 15 students, their backgrounds, their interests, and the kinds of challenges that they face. So, I would like online courses to have a minimum of 18 [students]. But they are usually 30 to 35 students with one instructor... [F1]
Participants were generally of the view that a large online class complicates implementation of instructional methods such as discussions and group work, which, depending on the nature of the course and desired learning outcomes, they considered to be some of the important ways of engaging online students.

Faculty support
Despite the fact that the university had a faculty support mechanism that administrators and some of the faculty participants described as good, faculty still felt that there was room for improvement. In particular, they cited the need for improved technological, pedagogical, and administrative support in order to overcome issues arising from: course design, limitations of course management systems, acquisition and maintenance of newer innovative technologies for teaching and learning, and keeping updated with relevant technologies.

High Level of Support Required in Online Course Design
According to faculty participants, course design for OLEs requires more skills and more support than in traditional courses. Participants indicated that designing online courses requires a high level of skills in use of learning technologies, in addition to pedagogical skills and content knowledge. They, therefore, felt that faculty teaching online courses often require a lot of technical support in accessing and using technology, and in course design. One participant said:

I think designing online courses is more difficult because you are designing for the asynchronous environment. That would be another challenge.... The more times you teach and revise a course, the more that you work out some of those problems. I think technology support from your institution is also very important. How much assistance you get and using technology or are you just out there on your own, learning about new technologies, figuring out how to use and experimenting with them, getting them setup.....technical support is also needed on a technology product that isn't really your product ..... In online courses, not only are you the instructor, but you are expected to be the technical expert too. So that is another area of challenge [F1].

Another faculty participant [F4] discussed the need for support from institutional academic leaders especially in getting release time to develop new online courses; “if you don’t have a course release, and you are developing using a whole new technology, the time to really do it isn’t there.” F2 also reminisced on the difficulties he had as a beginner online instructor:

...when I started teaching online I had no training whatsoever about how to do it. And basically, it was ‘this is what the other person did the last semester this was offered. Here’s the book. Here’s how they did it.’ And so I take it and I go, ‘Okay, I guess I’m going to do pretty much what they did.’ I didn’t know whether it was good. I didn’t know whether it worked. I didn’t know how to use the technology. I probably still don’t know all the technology that could be incorporated into an online course. The benefits, such as, ‘are there things that can save me time? Are there things that can get the material across to the students better?’ [F2]

F2 believed that it would have been helpful if before he started teaching online, he had been introduced to aspects such as how design of online learning environments differs from that of traditional courses, as well as getting tips on how to effectively utilize technology for teaching and learning in online courses.

In discussing the challenges of designing for OLEs, F3 explained that since most online communication is text based, faculty need to take extra care to ensure that they convey the intended messages to avoid misunderstanding. This perspective was echoed by another
participant [F5] while discussing issues that might affect the quality of an online course. She said:

> Some students have complained of instructors who are kind of snarky about students’ questions. You know, sometimes students will post on the discussion board if they were confused about an assignment, didn’t agree with something in the assignment or something that the instructor said, and some professors are very willing and open to that feedback but some might just be very rude about it. It has happened multiple times. And some of that could just be perception because you are not there face to face, so it is possible that their tone was coming across as perhaps more sarcastic and rude than they intended, but it is very easy in online courses to not be able to get tone correctly. Someone could write something on the screen that to them is totally innocent, fine. And you read and you are like, what?! I mean, it is just very easy to take offence in things that are not necessary offensive, and some professors are very quick to put little smiley faces. Having a period or an exclamation mark can make all the difference in how it comes across. I just think that it can be very hard to get your meaning across. [F5].

Participants felt that faculty need to have the skills that enable them to use precise and unambiguous language in virtual learning environments (VLEs).

**Limitations of Course Management Systems**

In the institution in which this study was conducted, Blackboard and Sakai were the commonly used Course Management Systems (CMS) for delivering online courses. However, some faculty participants were of the view that these two systems did not offer all the features they often needed in order to effectively meet their instructional objectives. Instead, they reported that they utilized a variety of other technologies and computer tools to augment the CMS supported by the institution. In particular, they were unhappy that these CMS did not adequately meet their expectations in supporting personalized experiences for students through synchronous audio and visual communication; and that they lacked a well-organized common area where learners could carry out a wide variety of learning activities and tasks, such as uploading artifacts that they have created, blogging, and creating sites where they could interact. That is, they lacked a common point where learners could use multimedia to interact. Participant F3 commented:

> I don’t like Blackboard. It’s limited. That’s why I go out and use other tools. Um, I think limitations are probably the biggest challenge. Okay, so one course I’m teaching now I created a website where I can put videos of them. They had to submit teaching videos, so I posted all of those videos for them. And then under the same website has individual blogs they write about—so they watch videos they posted and then they write, comment, to each other. I like individual websites for courses because it’s very self-contained. Blackboard doesn’t really have a place for a self-contained website. So sometimes - even for this course - I didn’t even use Blackboard, I only used the website. [F3]

Explaining why she uses other computer tools to augment the affordances of the CMS supported by the institution, F1 said:

> ...I think a quality course needs to look at various methods to provide that engagement and interactivity because as online technology continues to develop, there are more and more tools that can be used such as presentation on Tegrity, Prizo, Voicethread as a way to support more of a multi-media format in discussions... [F1]
Challenges in Keeping Faculty Updated with Technology

Faculty participants indicated that they were aware of the ever increasing number of technologies that could potentially be used for teaching and learning, but expressed concern that they generally lacked the enormous amount of time required to adequately explore them. Some said that they found it difficult to keep up with technology upgrades and newer technologies, even those they knew were particularly useful for their courses. This is partly because learning technologies increase and change rapidly. Also, due to the time constraints, faculty said that they found it convenient to rely heavily on the technologies supported by the institution and those that they were already familiar with. In relation to this, F1 said:

...You [instructor] tend to only use what you know and there needs to be a better way of sharing new information and providing easy ways for faculty to become users of that..... I mean the online courses aren't going to continue to evolve and get better unless there are better mechanisms for bringing in that information [to faculty]. It can be better technology, newer technology; it can also be what have we learned, what is effective. How might you be able to use this to redesign your course?... [F1]

F2 believed that even though faculty might be aware of the affordances of various technologies that could be appropriated to improve online instruction, often, they not only lack the pedagogical skills necessary for effectively employing these technologies in their instructional strategies, but also do not have the technical knowhow and wherewithal to keep up with rapid technical changes to these technologies. Furthermore, he argued that in a research intensive HEI where there is more emphasis on research than teaching (like the one where this study was conducted), faculty might not be motivated to invest a lot of time on activities related to teaching such as technology innovations and keeping themselves updated with emerging or updated learning technologies. One administrator participant noted that supporting faculty in keeping updated with current innovative technologies for teaching and learning was a big challenge for the institution especially because of the wide diversity of faculty needs in the many academic disciplines that the university offered.

Limited Opportunities for Information Sharing

Participants indicated that faculty who teach purely online courses often lack the opportunities to exchange information related to professional growth with their colleagues and might experience feelings of isolation. One faculty (F3) expressed regret that her work as an online instructor made it difficult for her to meet and socialize with other faculty. Teaching online courses, she stated, allowed her to work away from campus and so she often missed face-to-face interactions with professional colleagues and opportunities for support from them. She referred to feelings of isolation and lack of contact with colleagues as a ‘personal challenge’. She said:

This year, I taught 100% online.... and sometimes I will notice I'll get up at seven, go online, and all of a sudden it's ten in the night. But that's a personal challenge. It's just different [teaching online]. It's just different. You know, you can't walk down the hall and talk to a colleague. I don't see any colleagues. You know, it's hard to explain, it's just different. Yeah, it's a hard thing to explain...[F3]

Inadequate Funding for Technology Acquisition

Faculty participants reminisced inadequacy of support provided to them in acquiring and maintaining newer, innovative technologies for teaching and learning. They cited lack of funding to support acquisition of technologies as a challenge that hinders faculty from freely exploring and using innovative technologies for effective teaching and learning. F1 commented:
...I think we have really been missing on technology support. Money to support technology that faculty want to experiment with. If I am teaching a course and I want students to use a particular software program. First of all I need to able to learn that software program. Someone needs to provide it to me and then working out student rates or group rates. And then there is need for assistance in getting it to students, either through student cost programs or probably on a rare basis technology loaner program where college might buy....[F1]

Even though the university in which this study was conducted offers technical and pedagogical support to faculty in exploring and making use of learning technologies in their disciplines, faculty participants indicated that available funding could not cater for technology acquisition needs of each faculty member. However, they felt that better mechanisms should be put in place to prioritize faculty technology needs and to make it easier for faculty and students to access technologies that they may want to use to enhance teaching and learning.

SUGGESTIONS FOR IMPROVING ONLINE COURSE QUALITY

In discussing the challenges that faculty perceived they faced in their efforts to design and deliver quality online courses, participants also suggested solutions to these challenges, as means of improving the quality of online courses. Generally, faculty and administrator participants felt that there was still room for improvement on the initiatives that the university had undertaken to ensure quality of online courses and programs. Faculty participants in particular had more suggestions for improvement than administrators. Proposed solutions emphasized the need to adjust the institutional mission and culture, to further promote quality in online teaching and learning.

Table 2. Suggestions for Improvement of Online Courses

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<thead>
<tr>
<th>Theme</th>
<th>Attribute (Suggestions for improvement)</th>
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<tbody>
<tr>
<td>Institutional mission</td>
<td>• Promote excellence in teaching</td>
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<tr>
<td>Quality improvement culture</td>
<td>• Enhance faculty support</td>
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<td></td>
<td>• Optimize class size</td>
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<td>• Improve the process of acquisition and use of teaching and learning technologies</td>
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<td></td>
<td>• Make strategic use of data</td>
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<td>• Develop and nurture a culture of continual improvement</td>
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Institutional Mission
Faculty and administrator participants consistently emphasized the need to increase the stature of teaching at the university. They suggested that, regardless of mode of delivery, course quality could be improved through a faculty performance evaluation system that paid more attention to excellence in teaching.

Promote Excellence in Teaching
One of the issues that emerged during interviews with faculty was that, at that university, excellence in teaching was not as emphasized and rewarded as the ability to attract research grants, conduct research, and publish in refereed academic journals. Given that this study was conducted in a research intensive university, it was not surprising that research was given more prominence than teaching. Majority of the faculty participants felt that their careers “would be made in research and grants.” One member of faculty commenting on the low emphasis given to teaching compared to research, said: “teaching is just not a priority, and so it is not discussed much. It’s not emphasized on the annual
reviews. It’s not emphasized when we get together as faculty, and discuss things. It’s just not a priority.” Another participant discussing the lack of emphasis on teaching compared to research explained:

...there are incentives to publish research papers. It goes directly to how much money you are going to get in your salary raise. Teaching is included, but is not valued as much. If you want to get another job somewhere else where you get a big [salary] raise, it’s going to be your research that matter... Grants are greatly incentivized here. If you get a grant, you get money directly back into your salary. You buy yourself out of courses [teaching]....So, what incentive is there for great teaching? There’s none....So, yeah, there’s just no structure to exemplify and uphold great teaching, whereas there is, in terms of research and grants...[F5]

Faculty participants indicated that low emphasis on excellence in teaching was a major factor that determined whether or not faculty took part in institutional initiatives such as seminars or training sessions aimed at improving design and delivery of courses. One faculty participant explained:

When faculty are presented with an option of going to a free seminar which they are going to get nothing except maybe some ideas to teach better, or spend their time doing more research or writing, they are going to spend their time doing research or writing unless you offer incentives for that activity of going and getting trained to be better teachers online...[F2]

In general, faculty and administrator participants felt that in order to further improve course quality, there was need to raise the stature of teaching, consistently evaluate faculty performance in teaching, and reward those who excel. As one administrator explained, a heightened emphasis on teaching “certainly has the potential to enhance the quality of courses.”

An administrator participant disclosed that the university planned to review how faculty were evaluated in their teaching. The first phase in that process involved redesign of the student course evaluation forms and was complete at the time of this study. The second phase was planned to be the formation of a faculty panel consisting of “curator professors, curator teaching professors, and faculty honored for excellence in teaching and research” to outline how the university should evaluate the contribution of faculty in teaching and learning. The administrator explained that the committee would be expected to define that process, identify the metrics that should be included in such an evaluation, and explain how the process would relate to the evaluation and coaching undertaken by heads of departments. The administrator further explained that these measures were undertaken partly as a result of a prior study that showed that “faculty at the university wanted the stature of teaching increased.” In general, majority of faculty and administrators favored a balanced approach involving use of several metrics, in assessing the effectiveness of faculty and quality of courses.

Quality Improvement Culture
Generally, participants maintained that course and program quality could be sustained by having an institutional culture that continually seeks improvement. In particular, participants emphasized the need to continually strengthen faculty support mechanisms and the processes of acquiring and implementing technologies for teaching and learning. They stressed the importance of strategically using empirical data in making improvement decisions, and deliberately encouraging stakeholders to develop and maintain a culture of excellence.
Enhance Faculty Support
Faculty and administrator participants expressed the need for further enhancement of faculty support, especially with regard to providing faculty with opportunities to improve their skills in teaching online. Faculty also stressed on the need to be provided with on-demand support and opportunities to share information pertaining to online teaching among themselves.

Provide faculty with opportunities to improve online pedagogy
A faculty participant suggested that the university should consider providing training in online teaching pedagogy for interested faculty and all graduate teaching assistants prior to their teaching online. The participant argued that since online teaching is fairly new, many members of faculty have little or no experience in teaching online courses and so might teach them the way they best know how - like on-campus courses. Noting that learning management systems do not necessarily have all the features that an online instructor might want to use in teaching, he also argued that faculty need to be provided with support in learning new technologies that could be useful in delivery of instruction as well as in keeping current with these technologies.

Some administrator participants also discussed the university’s future plan to offer more faculty support in design and delivery of courses by establishing a **Center for Teaching Excellence** and a **Summer Institute**. The Center for Teaching Excellence is to provide interested faculty with the opportunity to improve their teaching by imparting skills in planning, design, and delivery of technology enhanced courses. The Summer Institute would give faculty ample time to develop online courses and programs during the institution’s summer break. Faculty across departments and disciplines participating in the Summer Institute would be paid to work with expert course designers to develop online courses and programs. This “immersion experience”, it was hoped, would provide skills and knowledge in course design as well as “create opportunities for inter-disciplinary collaboration across courses and curriculum.”

Provide support on demand to faculty
An issue that frequently emerged was the feeling by faculty that there was a lot of demand for their time. Faculty participants indicated that normally, their time schedules are not very flexible. They therefore found it difficult to take advantage of institutional support initiatives such as training sessions which were offered on fixed schedule basis. As such, they proposed that pedagogical and technical support be provided at the college level. Noting that some schools and colleges of the university already had such support, one participant expressed:

*Instead of everyone going out to a central place for training, I would really support expanding the e-learning specialists program where an e-learning specialist who can work closely with faculty, is provided to each college. I think it is done to some extent, but there is need for closer technical support in terms of learning technologies and how they can enhance effective teaching and learning. Our college does not have one of these e-learning specialists... [F1]*

Another participant calling for support on demand explained that:

*Anything that’s called support is going to take time. So, I think having folks [support] available when faculty have questions is really important. So, if I decide I want to use Tegrity, then is there somebody who could show me how to do that. But my guess is that’s the kind of thing that faculty are going to be way more available to do than... ’we’ve scheduled something from twelve to two [12pm -2pm] on Friday afternoons’... that’s harder for folks [F5].*
**Improve on strategies for sharing information among faculty**

Majority of faculty participants were aware that the university provided opportunities for faculty and external experts to share their experience and expertise in use of technology in teaching and learning, but they thought that such initiatives needed to be improved. For example, one participant claimed that training sessions were “often set up where someone describes something they do rather than ‘here is how you do it’ and giving you a take away so that you can actually do it...” Another participant talked of the need to invite renowned national experts on learning technologies on regular basis to interact closely with faculty at college or departmental level, over a reasonable period. She thought that inviting these experts to present in one session during training seminars or conferences organized at the university, might not be effective. Another participant proposed that a portal be developed for show-casing new learning technologies or sharing strategies for teaching and learning with technology, that have worked in the past. She suggested that the portal should also be a repository for material that inform faculty on how to use various technologies in teaching, so that “you [faculty] do not need to always go to a workshop or to have someone to help you.” Explaining the value of sharing such information, one participant said that without it “you tend to only use what you know.”

**Optimize Class Size**

Faculty participants expressed the need for improved communication between administrators and faculty at departmental level, regarding the number of students in a course. They felt that there was need for putting a cap on the maximum number of students per course based on the nature of the course and desired learning outcomes. They felt that having a large online class can negatively impact their teaching and subsequently, course quality. One faculty participant said:

> I think course enrolments need to be held down instead of jerking up...instead of getting as many students into each course as they possibly can. There needs to be caps on course size based on what can be effective for that particular course. ....there needs to be caps on course size that are based on learning outcomes, not just money...[F1]

Commenting on online course size, another participant suggested that departments find ways to “keep them small and manageable.”

**Improve the Process of Acquiring and Using Teaching and Learning Technologies**

An issue that arose severally during interviews with administrators was the need for the university to improve its process for acquisition and implementation of teaching and learning technologies and other innovations in education. One administrator said:

> I would love to see better and clearer mechanisms for technology innovation. I think that is something we don’t have a very clear way for faculty members or for anybody to be able to explore new technologies, to look at them from lots of different perspectives and to get them accepted for use at the university...[A5]

The administrator added that before any technologies could officially be accepted for use in teaching and learning at the university, they ought to be screened and cleared on such pertinent issues as security, Family Educational Rights and Privacy Act (FERPA) concerns, licensing issues, and on Americans with Disabilities Act (ADA). She argued that the whole process of clearance, including application for funding for technology acquisition, needed to be made clearer to the university community. Some faculty participants also expressed concern over the existing bureaucracy in those processes at the university.

Another issue that some faculty participants raised was the need to promote use of technology including web-based technologies in courses delivered in all formats, not just in online courses. They argued that to make it easier and seamless for students and faculty to migrate from face-to-face modes of instruction to VLEs, the university should consider
intensifying its campaign to promote relevant use of web-based technologies such as Web 2.0 tools and applications in courses that are online, face-to-face, or those delivered in both formats (hybrid). They opined that motivating faculty who teach only face-to-face courses to adopt and implement web-technologies, for certain course tasks, would enable them and their students to gradually become more comfortable with use of technology in teaching and learning. One participant who also taught face-to-face courses explained how she ensured that she used some web-applications in each of her on-campus courses. She said:

*I think that online and on-campus courses should not be made to look like they are too separate. There ought to be a flow... So, for instance, with my campus courses, we still have a course site. We still use VoiceThread. You know, during a snow day, we still meet, we just meet online... [F3]*

However, to ensure ease of access, she stated that such technologies should be compatible with a wide variety of devices including portable ones, such as smart phones and tablets that gave students the flexibility to access course content from multiple locations.

**Make Strategic Use of Data**

This strategy was uniquely advanced by administrator participants. They felt that there was need to enhance the use of data to support decision making, especially pertaining to improving teaching and learning. In particular, they highlighted the need for the university to use results from studies on improving teaching and learning i.e. ‘scholarship of teaching’; to utilize learning analytics; and to encourage faculty to optimally utilize existing course quality improvement mechanisms such as student course evaluations and course quality standards.

**Encourage ‘scholarship of teaching’**

Two administrator participants mentioned that the university planned to intensify its efforts to encourage faculty to conduct empirical research related to improving teaching and learning, and to publish their results. They said that doing so would provide administrators with verifiable data that they could use to make decisions in such areas as faculty support and acquisition of teaching and learning technologies. Administrator participants indicated that studies on how the use of specific computer tools and applications might have impacted learning outcomes, effects of course redesign, or other issues encountered in use of learning technologies at the university, might be useful in guiding them to make decisions on related matters. One administrator explained that one of the challenges that the university faced was lack of “appropriate ways to intentionally assess accurately, how use of educational technologies was impacting teaching and learning”. He gave an example of an application called Tegrity that the university had acquired to allow faculty to electronically capture lectures and provide them online, saying that he was unaware of how students utilized that application and the impact it had on learning outcomes.

**Incorporate the use of learning analytics**

Two administrator participants expressed the need to rely more on the use of data to support strategic decision making in relation to technology utilization in teaching and learning. They opined that having adequate information on such elements as the number of online courses on offer every semester, the types of computer tools and applications used in these courses and their usage patterns, could be useful in identifying issues arising from their use. Reports on usage patterns could provide symptoms of potential problems in learner retention and persistence, or even to identify difficulties in use of these technologies. Analysis of these data could be useful to university administrators in making decisions and optimizing service delivery in such areas as faculty support and student support. For example, the university might opt to improve support on technologies that faculty and students have difficulties using or to withdraw support on technologies that are no longer optimally utilized. One administrator revealed that the university was in the process of implementing a tool called ‘Starfish’ to provide on-demand learning analytics. Nonetheless, majority of the administrator participants were of the opinion that existing
faculty support initiatives and course quality improvement mechanisms were not optimally utilized. One participant said:

I would like to see more widespread culture of quality assessment in general... that people are interested in looking at online courses from all pieces of information such as student course assessment, Quality Matters Standards, research data... there are lots of pieces of data out there. We would love to see more discussion of that and more thoughtful application of those in [course] quality assessment across the university. [A5]

She further discussed the need for discussion and encouragement at the departmental level for faculty and all concerned to better utilize the available course quality assessment and enhancement mechanisms. She emphasized that using several of the available assessment techniques gives a more wholesome picture of course quality.

Develop and Nurture a Culture of Continual Improvement
Participants generally felt that the institution should: 1) initiate and maintain an agenda of searching for and implementing course quality improvement opportunities; and 2) identify the things that work well that it should continue to do, those that don’t work well that it should stop doing, and those that would really work that it is not doing at all. Stakeholders such as faculty and administrators should then make every effort to find the best, most effective way to improve on a continual basis, at the course, program, and the institution levels. Faculty should also be encouraged to maintain a culture of continuous professional growth and development.

Administrator participants expressed the need for regular assessment to ensure that the university was using “appropriate technologies in the best way possible to support student learning“, and engaging in a “continuous process of improving, updating, and enhancing.” One administrator expressed the need for the university to consider the following pertinent issues:

What are the things that work really, really well that we [university] should continue to do? What are the things that don’t work well that we should stop doing? What are the things that would really work that we are not doing at all? ...the answers to those questions differ from course to course and from instructor to instructor. As a campus, we’ve got to find the best, most effective way for us to ask and answer those questions on a continual basis... [A2]

Another administrator said that on matters pertaining to quality improvement, the university leaders ought to “work at it all the time” stating that they could never say “we are done”, especially because technology keeps on changing.

Administrators were also in agreement that maintaining a culture of continual improvement requires determination and the will to find means to overcome challenges. They mentioned three main challenges that the university faced in attempts to improve course and program quality. These were:

- Limited resources – administrators expressed concern that budget cuts in previous years and the likelihood that the trend of reduction in available funds was expected to continue, might have negative impact on some university plans to improve course quality.
- Difficulties in striking a balance between academic freedom of faculty on the one hand, and the need to optimally utilize available mechanisms of course quality improvement and also meet quality expectations of external stakeholders - such as the community - on the other hand.
- Faculty resistance – in addition to faculty desire to exercise their academic freedom, some administrators claimed that there were some faculty who do not
accept that they need guidance to effectively perform their teaching roles, and that even providing incentives to them does not necessarily guarantee that they will participate in course quality improvement initiatives.

**SUMMARY OF PERCEIVED CHALLENGES AND RECOMMENDED SOLUTIONS**

Table 3 below summarizes the emergent challenges and the main solutions suggested by participants.

**Table 3. Perceived Faculty Challenges in Design and Delivery of Quality Online Courses and Proposed Solutions**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Proposed Solutions</th>
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| Limited opportunities for understanding learners and their learning needs | • Encourage faculty to provide for and encourage occasional audio-visual synchronous meetings (virtual office hours) with individual students.  
  • Utilize collaborative group work where the nature and structure of the course allows. Doing this enables students to learn from each other rather than relying heavily on the course instructor.  
  • Encourage faculty to use computer tools and applications that support virtual communication and interaction, and support them in acquiring, adopting, and utilizing those technologies. |
| Impact of large online class sizes on course quality                      | • Encourage open communication at departmental and higher levels in determining the optimum number of learners in each course that retains the economic viability of the course and does not hinder achievement of desired learning outcomes. |
| Need for faculty to have technical and pedagogical skills relevant for teaching online | • Provide paid ‘course free hours’ to faculty who are tasked to design a new course or to redesign a course.  
  • Provide training opportunities that are customized to the needs of faculty.  
  • Provide adequate technical and pedagogical support on demand.  
  • Encourage faculty to proactively seek feedback from students about ‘what works and what does not’. |
| Perceptions that teaching of online courses is time intensive              | • Provide adequate technical support and pedagogical support on demand  
  • Ensure class sizes are at a level that allows effective instruction i.e. ensure that institutional economic needs do not override or sacrifice course quality through enrollments that overload course instructors  
  • utilize collaborative group work where the nature and structure of the course allows  
  • provide opportunities for faculty who teach online courses to share information and experiences related to improving teaching and learning on VLEs |
| Course management systems have limitations that impact the quality of online course delivery | • provide adequate support to faculty in selecting and utilizing computer tools and applications that fit their preferred instructional strategies and overall teaching philosophy  
  • Provide, as much as possible, the latest versions of LMS used at the institution.  
  • Encourage and support faculty to use a variety of computer tools that support achievement of desired learning outcomes. |
| Keeping updated with rapidly changing learning technologies               | • Facilitate faculty with support that promotes their efforts to explore, experiment with and learn to use newer, innovative technologies. Such support could be technical, financial, or provision of relevant information sources. |
**Challenge**

Lack of adequate institutional processes and funding to support acquisition and maintenance of learning technologies

- Provide clear guidelines on how faculty can request for computer tools or applications for teaching and learning
- Institution should consider negotiating for site licenses and student prices with vendors of computer tools or applications that support teaching and learning.
- Provide funding for acquisition of computer tools or applications that faculty might want to use to augment – or to add to - technologies already acquired and supported by the institution.
- Consider assessing the effectiveness of technologies already acquired, for example, using learning analytics, to ensure cost-efficiency.

Difficulties in observing and assessing practical application of knowledge gained in VLEs

- Where distance is an issue, initiate agreements with qualified third parties who will assess application of practical knowledge, on behalf of the instructor and the institution offering the course.
- Where technology infrastructure and nature of the course allows, use appropriate online applications that facilitate real-time observation of a student.

Feelings of isolation and limited opportunities for exchange of information with colleagues

- Institution to consider providing means by which faculty teaching online courses can share information and experiences related to professional development, and actively encourage them to participate in such initiatives.

**DISCUSSION AND CONCLUSION**

Three broad categories of the major challenges encountered by faculty in the design and deliver of online courses emerged in this study. These related to: 1) proximity to learners; 2) teaching load; and, 3) faculty support. A general inference that one could make from this finding is that these challenges could have some relationship with perceptions of course quality, as explained here below. Difficulties in getting to adequately understand learner needs in a virtual environment impacts faculty perceptions of their ability to design quality courses and quality teaching and learning processes. For example, inability to sufficiently understand learner needs might lead to instruction design that does not adequately address learners learning needs, while difficulties in assessing practical application of knowledge may impact faculty ability to assess attainment of course objectives.

Faculty suggested that teaching overload can impact processes that have a bearing on online course quality. For example, they indicated that large class size is a challenge because it negatively impacts elements of course processes such as creation of a cohesive community of learners and ability to provide adequate faculty feedback to all learners. Faculty perceptions of overload might also indicate administrative lack of adequate dialogue with faculty on optimal class size and instead opting for better income that larger classes generate. Similarly, the perception by faculty that an online course requires more time than does a similar face-to-face course might be indicative of lack of appropriate faculty support, which could impede the ability of faculty to implement quality course processes. Even though administrators indicated their awareness of the importance of faculty support in providing quality online courses, faculty and administrators appeared to have differing concepts of what is effective faculty support. A mismatch between the support that faculty need and the support provided by the university may impact their ability to design and deliver courses that facilitate achievement of students’ educational goals.

The solutions proposed for alleviating perceived challenges in the design and delivery of quality online courses suggests that creating an institutional mission and culture that recognizes faculty support needs, as well as promoting excellence in teaching and encouraging continuous improvement in elements of course design, course processes, and
infrastructure to support online courses, could positively impact faculty perceptions of course quality.

Two issues related to course quality spontaneously emerged from this study: 1) the relative importance of teaching versus research in assessing faculty performance; and 2) academic freedom of faculty. Both of these issues were found to be related to faculty awareness and willingness to participate in course quality improvement initiatives. Faculty reported not feeling motivated to excel in teaching, since doing so was not given much credit compared to conducting research, in assessing their overall performance. In that regard, some faculty participants indicated that they did not pay much attention to institutional course quality improvement initiatives. Faculty comments that use of course quality standards might not be in line with their teaching philosophy and could impact their academic freedom calls for improved dialogue between academic administrators and faculty. Additionally, administrators need to have clear and effective strategies of communicating to faculty about the various course quality improvement initiatives that they have instituted, and the benefits that faculty gain by participating in them. In assessing faculty performance, the stature of excellence in teaching should be high enough to motivate faculty to engage in and actively utilize course quality improvement initiatives. HEIs should also consider developing and using balanced, multiple-measure faculty performance assessment criteria, that as much as possible takes into consideration the interests of main stakeholders, as pertains to course and program quality.

In conclusion, as demand for online courses continues to grow and technology gradually improves to provide better opportunities for online interaction, HEIs will be under pressure to offer or to continue to offer online courses that meet stakeholders’ quality requirements in an effective and efficient manner. It is important for providers of online courses to realize the critical role that adequate faculty support plays in ensuring course quality. In order to develop and maintain effective faculty support strategies and systems, HEIs need to continually assess the challenges that faculty face in design and delivery of courses through VLEs, and to prioritize efforts to remediate them.

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CONFESSIONS OF A MOOCER: AN AUTOETHNOGRAPHIC INQUIRY ON ONLINE DISTANCE EDUCATION

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ABSTRACT

Massive Open Online Courses (MOOCs) are dramatically restructuring, reshaping, and redefining the vast landscape of teaching and learning across the globe. With MOOCs’ ubiquity, openness, and accessibility, they have become a new platform for teacher professional development. Utilizing a co-constructed narrative inquiry, this paper aimed to examine aspects of our memories, perspectives, and experiences in successfully completing Teach English Now! a 150-hour online Teaching English to Speakers of Other Languages (TESOL) Certificate Course from Arizona State University, United States of America via Coursera (www.coursera.org) as the MOOC platform. Acting as reflective practitioners and as teachers-as-researchers, we unpacked how we traversed the massive information superhighway in our quest for teacher professional development, what it was like to be an online learner, how we saw our role, why we believe what we believe about MOOCs’ potential, and how we think all of these affect our decisions and practices in our classrooms and contexts. Data from our individual journals, individual reflections, and peer discussion revealed how MOOCs’ features such as ‘openness’ and ‘flexibility’ as afforded by ubiquitous technology, sound course design, and strong learning community support have influenced us personally, socially, and professionally, making it a practical platform for teacher professional advancement particularly in developing countries such as the Philippines. Andragogical and pedagogical implications are provided in the light of our MOOC experience.

Keywords: Connectivism, cyberlearning, massive open online courses (MOOCs), online distance education, teacher professional development.

INTRODUCTION

Since the inception of CCK08: Connectivism and Connected Knowledge, a massive open online course (MOOC) that was designed and facilitated by George Siemens and Stephen Downes in 2008, taken by 25 students enrolled at the University of Manitoba and participated in at the same time by over 2200 students from the different parts of the world at no cost and without earning any credit (Educause, 2011; Decker, 2014; Lowe, 2014), the ‘digital revolution’ in education (Brabon, 2014, p.1) was born. Since then, global education leaders, policy makers, field practitioners, and researchers have turned their gaze to the potentials of MOOCs in reimagining how knowledge can be communicated via this modern platform and in investigating whether MOOCs provide sound instructional design leading to quality outcomes and experiences for the students (Hayes, 2015). Regarded as the new era of learning (Soylev, 2017), MOOC has become 2012’s buzzword in higher education (Chen, 2014), making 2012 the “year of the
MOOCs” (Pappano, 2012). David Willetts, former U.K. Universities and Science Minister once considered MOOCs as “the opportunity to widen access to our world-class universities and to meet the global demand for higher education” (Wintrup, Wakefield, & Davis, 2015, p. 6). Billington and Fromeueller (2013) and Dyer (2014) stated in Israel (2015) that MOOC is a catalytic innovation that is set to revolutionize the landscape of higher education.

MOOC stands for Massive Open Online Course, which is a term coined by Dave Cormier after Siemens and Downes’ CCK08 MOOC; however, Siemens and Downes credit the term to David Wiley and Alec Couros who created their own wiki-based free online courses in 2007 (Decker, 2014). Massive pertains to the potential of attracting thousands of enrollees from different parts of the world such as the case in 2011, when a MOOC on Artificial Intelligence developed by Sebastian Thrun who was a professor at Stanford University, was taken by approximately 160,000 students from around the globe with 28,000 students who successfully completed the course. Open means that anyone from anywhere in the world, regardless of educational background, socioeconomic status, gender, age, and color, can enroll in a MOOC via the Internet. Liyanagunawardena et al. (2013) indicated that the word Open suggests that MOOC participation does not necessarily have requirements such as academic background, tuition fees, and course completion. Others suggest that the term Open should refer to Open Access, which means that the content of a MOOC is not only free and available to everyone, but is under Creative Commons License allowing anyone to download, save, reuse, remix, retain, and redistribute content to suit his or her purpose and context with proper acknowledgement of the developer (Decker, 2014). Yuan and Powell (2013 in Philippine Institute for Development Studies, 2015) wrote, “The development of MOOCs is rooted within the ideals of openness in education, that knowledge should be shared freely, and the desire to learn should be met without demographic, economic, and geographical constraints.” Online refers to the mode of content delivery, which is accessed by the learner via the Internet using electronic gadgets such as desktop computer, laptop, tablet, phablet, and cellular phone. Course entails the format of how a certain course operates with phases such as enrollment, start and end dates, course content, assessment and evaluation.

The MOOC movement in educational landscape was picked up by various institutions and they started establishing MOOC platforms in collaboration with various field experts and organizations. Some of the most notable MOOC providers in the world include the following: Udacity (www.udacity.com), founded in June 2011 by Sebastian Thrun, David Stavens, and Mike Sokolsky and established in February 2012; Coursera (www.coursera.org), founded by Andrew Ng and Daphne Koller and launched in April 2012; edX (www.edx.org), created by scientists from Harvard University and Massachusetts Institute of Technology (MIT) and opened in May 2012; Canvas Network (www.canvas.net), launched in November 2012 by Instructure which was founded by Brian Whitmer and Devlin Daley in 2008; Open2Study (www.open2study.com), launched in April 2013 by Open Universities Australia; and Iversity (www.iversity.org), created by Jonas Liepmann and Hannes Klöpper and founded in October 2013.

MOOCs gained both appraisals and criticisms. Opinions about MOOCs are divided about their value and importance. MOOCs are seen as “significant catalysts” in education (Bayne & Ross, 2014), as “an innovation with great potential to widen participation and promote lifelong learning” (QAA, 2014), and as a “recent stage in open education” (Creelman, Ehlers, & Ossiannilsson, 2014). On the other hand, MOOCs are viewed as “disruptive technology” (Christensen, 2010) possessing the “characteristic of bringing disruptive education” (Zancanaro, Nunes, and Domingues, 2017), as merely a “marketing exercise” (Conole, 2013), and as a “lousy product” (Thrun, 2013). And in places like
Harvard, several liberal arts professors have been protesting “the rush to embrace MOOCs, which they worry will undermine the personal, intellectual connection inherent to a liberal arts education” (Carr, 2013, p. 2 in Johnson, 2013). Nevertheless, Creelman et al. (2014) emphasize that ‘MOOCs present the possibility of new approaches to education,’ and Wintrup et al. (2015) suggest three key areas for further research on MOOCs: education enhancement focusing on curriculum development, higher education and marketing, research, and policymaking.

**MOOCs for Teacher Professional Development**

The egression and utilization of MOOCs for teacher professional development (henceforth, TPD) remains uncommon, as recent studies on MOOCs primarily focuses on MOOCs’ nature in providing connectivity of learning (Mercado-Varela, Beltran, Perez, Vazquez, & Ramirez-Montoya, 2017), evaluation of various platforms used in the delivery of MOOCs (Zancanaro, Nunes, & Domingues, 2017), and evaluation of different types of MOOCs (Kocdar, Okur, & Bozkurt, 2017), inter alia. Research on MOOCs primarily deals with their effects for higher education and lifelong learning, with little attention given to the intersection of MOOCs and TPD. However, studies on MOOCs for TPD is on the threshold of gaining momentum (Jobe, Ostlund, & Svensson, 2014). While TPD is considered a developing field of research, Evans (2002) comments that the concept of TPD still lacks a clear definition. He then defines TPD focusing on “professional development as a process, where a teacher performs an activity to achieve attitudinal and functional development.” TPD can foster improvements in teaching (Kennedy, 2016).

Kennedy (1998) categorized research on TPD into four foci: (1) generic teaching principles, (2) subject-specific teaching practices, (3) curriculum and pedagogy, and (4) how students learn. Major research on TPD focused on TPD per se (e.g., Borman, Gamoran, & Bowdon, 2008; Penuel, Gallagher, & Moorthy, 2011), evidence of student achievement (e.g., Roschelle et al., 2010), motivation for learning (e.g., Roth et al., 2011), impact on student performance (e.g., Heller, Dahler, Wong, Shinohara, & Miratrix, 2012), and TPD program design (e.g., Sher & O’Reilly, 2009; Opfer & Pedder, 2011).

Conducting TPD is often costly, as it requires the use of resources from both the funding organization and the teacher participant. For instance, Odden, Archibald, Fermanich, and Gallagher (2002) created a framework that discusses the elements involved in TPD and their corresponding costs. These elements include the following: (1) teacher time, (2) training and coaching, (3) administration, (4) materials, equipment, and facilities, (5) travel and transportation, and (6) university tuition and conference fees.

With the increasing costs of and high demand for TPD, the most practical option is to use the concept of MOOC. Through MOOCs, teachers can access online courses free at their own pace and space. MOOCs for TPD are now becoming popular. For example, Coursera, in collaboration with its course providers, recently launched courses specifically for TPD (Pope, 2013). In fact, Coursera now contains a search parameter like “Teacher Professional Development”, which currently has 1,164 courses available to interested MOOC participants. This development suggests that MOOC providers acknowledge the trend that the number of MOOC participants who have degrees is increasing, and that they enrol in MOOCs to advance their learning. This was observed by Emmanuel (2013) in his study, which indicated that 83% of MOOC participants were already holding two- or four-year post-secondary degrees. Hence, MOOCs now are seen to be “moving from offering only traditional learning to even offering career development (lifelong learning) and blended learning opportunities” (Emmanuel, 2013). One study that affirms this observation was conducted by Mackness, Waite, Roberts, and Lovegrove’s (2013), which showed that “small task-oriented MOOCs can effectively support professional development of open academic practice.” However, while MOOCs for teacher professional
development are increasingly gaining momentum, there is little account about their effectiveness to the teacher participants in various contexts. “In general, the body of research studying the use of MOOCs for teacher professional development is scarce” (Jobe, Ostlund, & Svensson, 2014). It is this gap that this paper intends to address.

Arizona State University’s Teach English Now! A MOOC for TPD

This paper explores our experiences and viewpoints upon successfully completing Teach English Now! – a teacher professional development program offered by Arizona State University (ASU) via Coursera. Located in Tempe, Arizona, United States of America, ASU is a top 100 school globally and is recognized for its outstanding programs and innovations. ASU is ranked 1 ‘Innovative University in the U.S.’ and ranked 1 ‘Producer of Fullbright Scholars’ by the U.S. News and World Report. Coursera is the world’s biggest MOOC platform with 149 university partners, over 2,000 courses, more than 180 specializations, 4 degrees, and over 25 million learners. Teach English Now! is an online 150-hour TESOL or Teaching to Speakers of Other Languages Certificate Program consisting of a series of eight courses that can be completed on a self-paced mode from 16 weeks to 1 year. This course meets all standards outlined by the TESOL International Association – the world’s authority for TESOL for over 50 years now.

The Teach English Now! TESOL Certificate Courses include the following: (1) Foundational Principles, (2) Theories of Second Language Acquisition, (3) Lesson Design and Assessment, (4) Second Language Reading, Writing, and Grammar, (5) Second Language Listening, Speaking, and Pronunciation, (6) Technology-Enriched Teaching, (7) Capstone 1, and (8) Capstone 2. The estimated cost of the TESOL Certificate is $392.00. We started to take Teach English Now! last April 2016 and we successfully completed the eight courses. We graduated last December 2016 and received our TESOL Certificate from ASU.

Research Questions

This paper shows our experience-based testimonies about our successful completion of ASU’s 150-hour Teach English Now! TESOL Certificate Course and how it has shaped our professional development as English language educators. Specifically, we aim to answer the following questions:

- What are the features of Teach English Now! that make it an effective online course for teacher professional development?
- How do we reflect upon our teacher professional development based on our Teach English Now! experience?

METHOD

This study utilized an autoethnographic inquiry to reveal our personal experiences in participating in and completing Teach English Now! as a form of our teacher professional development. “Autoethnography is an approach to research and writing that seeks to describe and systematically analyze (graphy) personal experience (auto) in order to understand cultural experience (ethno)” (Ellis, 2004; Holman Jones, 2005). Autoethnography can take in many forms: layered accounts (Charmaz, 1983), reflexive ethnographies (Ellis, 2004), narrative ethnography (Tedlock, 1991), co-constructed narratives (Vande Berg & Trujillo, 2008), interactive interviews (Ellis, Kiesinger, & Tillmann-Healy, 1997), reflexive dyadic interviews (Ellis, 2004), personal narratives (Tillmann, 2009), indigenous/native ethnography (Denzin, Lincoln, & Smith, 2008), and community ethnography (Toyosaki, Pensoneau-Conway, Wendt, & Leathers, 2009). Our

Data
We used co-constructive narratives (Vande Berg & Trujillo, 2008) to draw upon our experiences in successfully completing Teach English Now! We analyzed our personal journals, chat messages, MOOC discussion forum posts, MOOC peer feedback, ASU expert comments, and dyadic discussion from April to December 2016. After our individual analysis of our experience, we gathered and reflected upon our eight-month MOOC journey. Because we intend to make sense and draw meaning from our experience, the narrative inquiry seems appropriate as it “captures personal and human dimensions of experience over time, and takes account of the relationship between individual experience and cultural context” (Clandinin & Connelly, 2000). As natural storytelling organisms, humans lead storied lives, which educational research can capture through narratives. The narrative research, therefore, is “the study of the ways humans experiences the world” (Connelly & Clandinin, 1990). In narratives, we see “the story in the study, the tale in the theory, the parable in the principle, and the drama in the life” (Clifford & Marcus, 1986; Suleiman, 1986; Turner & Bruner, 1986; Rosaldo, 1989; Bordo, 1990).

RESULTS AND DISCUSSION

Navigating ASU’s Teach English Now! via Coursera MOOC Platform
After searching for ways to advance our knowledge and skills in English language teaching, we came across the concept of MOOCs by navigating through the Internet. We have learned about various MOOC platforms such as edX, Coursera, and Udacity, and searched for possible courses that would fit our interest and schedule. We were full-time university instructors and heavy workloads and expensive training costs would usually prevent us from taking leave of absence to attend teacher seminar-workshops and conferences for professional development. We were excited to discover that there were several teacher specialization courses offered by top universities across the globe that we could take via MOOC platforms. After comparing course offerings and syllabi, we finally decided to enroll in Arizona State University’s Teach English Now! via Coursera.

Teach English Now! consisted of eight courses amounting to $49 each. Because we lack financial resources, we decided to avail of Coursera’s Financial Aid Program. The ‘audit course’ option was possible with free access to the courses; however, there would be no certificate given upon completion of the course. We needed to have certificates for submission to our university’s promotional program. In applying for Coursera’s Financial Aid Program, we needed to answer the following questions for evaluation of the scholarship grant committee. Application for financial aid was required for each of the eight courses. The instructions read like this:

If the financial aid is the right option for you, please proceed by filling out this application:

- What is your annual income in USD?
- Which country are you located in?
- Please describe your financial need and explain the specific circumstances that motivate your request for financial aid. (50-300 words)
- Please tell us why you are taking this course. What is your interest in this field? How would a Course Certificate be valuable to you? (50-300 words)
When participating in this course, how do you intend to demonstrate academic integrity and contribute to the course’s community? (50-300 words)

We received the financial aid notification from Coursera via email within the day of application. However, at present, it would take approximately 15 days to receive the notification due to bulk applications from several course takers around the world. As soon as we received the scholarship grant from Coursera, we started taking the first of the eight courses of Teach English Now! Each course required a separate application for financial aid. We applied for financial aid for all the Teach English Now! courses, and all of them were granted by Coursera; hence, we did not spend any amount in finishing the eight courses.

MOOC-ing, Learning, Collaborating
We started our online teacher professional development as Teach English Now! participants on April 1, 2016. The eight courses were divided into two specializations: TESOL Certificate, Part 1: Teach English Now! and TESOL Certificate, Part 2: Teach English Now! Part 1 consisted of the following four courses: Teach English Now! Foundational Principles, Teach English Now! Theories of Second Language Acquisition, Teach English Now! Lesson Design and Assessment, and Teach English Now! Capstone Project 1. Part 2 had the following four courses: Teach English Now! Second Language Reading, Writing, and Grammar, Teach English Now! Second Language Listening, Speaking, and Pronunciation, Teach English Now! Technology Enriched Teaching, and Teach English Now! Capstone Project 2.

In Teach English Now! Foundational Principle, we learned about foundational principles on concepts such as motivation, risk taking, and balancing the teacher profession by identifying, summarizing, and evaluating seven basic language-learning paradigms through various insightful metaphors and engaging stories. In Teach English Now! Theories of Second Language Acquisition, we learned about different second or foreign language acquisition theories as well as varied approaches and practices in the teaching and assessment of macro skills such as listening, speaking, and pronunciation, through a presentation of historical approach of teaching practices of different teachers through the years. In Teach English Now! Lesson Design and Assessment, we learned about how to design coherent and effective lesson plans based on several considerations such as formulation of learning objectives, identification of appropriate methods, gathering of relevant materials, organization of learning activities, and assessment and evaluation of student learning outcomes. The course also taught us to identify and prepare teaching materials by carefully analyzing, adapting, and creating our own teacher professional resources.

Teach English Now! Second Language Reading, Writing, and Grammar presents to us information on reading and writing courses, and the integration of grammar within those courses. It took us through a series of fairy tales and fables to examine basic reading and writing strategies. Teach English Now! Second Language Listening, Speaking, and Pronunciation introduced us to the aspects of listening and speaking that are challenging for students and teachers. We also learned about basic strategies that can help ease the acquisition and instruction of listening and speaking. Teach English Now! Technology Enriched Teaching presented us some key concepts on effective integration of technology into our teaching, without overshadowing language learning. We were also introduced to trends in educational technology, as well as strategies on how to adapt, apply, and implement these trends in our own classroom contexts.

Teach English Now! Capstones 1 and 2 were online practicum where we demonstrated our teaching skills, as we built on our completed tasks from the previous courses to deliver lesson
plans, observe teaching demonstrations from ASU’s master teachers, and create a professional teaching portfolio, which served as the final course requirement. The portfolio was a compilation of all the outputs from the eight courses such as teaching philosophy, teacher tip, lesson plans, and micro teaching videos. The capstone for specialization 1 was peer reviewed, while the capstone for specialization 2 was expert reviewed. We prepared 10 hours of lesson plan content and we recorded ourselves instructing for a portion of each of the lesson plans in a micro-lesson format. We recorded 10 videos that were 6-10 minutes long and uploaded full lesson plans. Our peers from the different parts of the world watched our micro teaching videos, read our lesson plans, and provided peer feedback. We also had six hours of observation of full lesson plan videos of ASU master teachers. We received individual certificates for each of the eight courses successfully completed and two additional certificates indicating completion of the specialization courses. After we successfully completed Capstone 2, we received Arizona State University’s TESOL Certificate with a certificate number and signed by ASU’s Office of the University Provost and the Lead Course Instructor. ASU also provided a permanent verifiable web link for the certificate. Below are samples of the certificates we received from ASU and Coursera.

Figure 1. ASU-Coursera Certificate for Individual Courses
(Shareable and verifiable link: coursera.org/verify/PZ946322RJ2Q)

Figure 2. ASU-Coursera Certificate for Specialization Courses
(Shareable and verifiable link: coursera.org/verify/specialization/V2EXM2WDQA3A)
Our ASU-Coursera eight-month journey for teacher professional development was not a walk in the park. We had several simultaneous roles: a full-time classroom instructor with 30 hours of teaching load weekly, a part-time graduate school student taking a doctorate degree in Applied Linguistics, and a MOOC learner. However, despite our hectic schedule, we managed to stay focused on the MOOC by having a strong time management system, self-discipline, and peer collaboration. We engaged everyday via face-to-face discussions, online chats, text messages, and phone calls about our MOOC tasks, consulting with each other and sharing ideas about how we understood certain concepts and how we performed in the online quizzes, peer feedback, expert feedback, online discussion forums, micro teaching demonstrations, and weekly assignments. We had a very challenging time, but we were happy and satisfied that we were learning tremendously every day. After analyzing our journal entries, chat messages, and online discussion posts, we have identified important points that we believe had helped us successfully complete ASU's TESOL Certificate Course. These include the following: (1) comprehensive course design, (2) avant-garde teaching approaches of the MOOC instructors, and (3) engaging and supportive learning community.

ASU's 150-Hour TESOL Certificate Course follows TESOL International Association's standards for short-term TEFL/TESL certificate programs (TESOL.org, 2015), which include organization and program management standards, curriculum and instructor standards, and candidate standards. Following TESOL's organization and program management standards, we observed that the ASU TESOL Course adhered to the following standards: English was used as a medium of instruction, there were clear goals and varied instructional methodologies, there was a formal plan for revision and review, and there were formative and summative assessments. With curriculum and instructor standards, we observed that the curriculum observed prescriptiveness and flexibility of the lessons for local contexts, as well as there were opportunities to demonstrate our best practices. As regards candidate standards, we observed that the following domains were addressed: language, culture, instruction, assessment, and professionalism. We learned about the structure and components of language such as phonology, morphology, syntax, and semantics; the role of language in the society; and the importance of English in the world today. We also learned about the theories of first and second language acquisition, as well as how people learn language in a variety of
contexts. Furthermore, we learned about planning instruction such as skills integration, implementing instruction such as the inclusion of activities for meaningful and authentic use of language, and using instructional resources such as selection and adaptation of appropriate print and virtual materials. With these, we were assured that the course that we were taking adhered to the global standards, and that we were getting good and quality education that was worth our time, energy, and effort. This finding delineates Chugh, Ledger, and Shields’ (2017) claim that sound curriculum design is essential to a successful distance education, which should reflect educational principles, represent elements of engagement and pedagogy, and meet institutional and industry requirements through its triadic features consisting of pedagogy, technology, and community.

Another feature of the course that had captivated us was the use of avant-garde approaches to teaching by ASU TESOL experts, who did not resort to talking-head lecture-style format of teaching. Despite having heavy workloads, we were excited to learn from engaging lecture videos, which employed creative and thematic techniques. Consequently, the course ranked highest in terms of completion rates and student rankings. Some of the learners commented that the course was ‘excellent’, ‘marvelous’, and ‘amazing’. Other learners noted that ‘the course was presented well...the team put together an effective presentation of important techniques for teaching language...and the material was clear, thorough, and important’ (https://www.coursera.org/learn/english-principles#ratings). Our journal entry dated 12/19/2016 echoes this observation: “Finally, I’m done! It was a challenging yet worthwhile online learning experience. Kudos to the Teach English Now! Team especially to Dr. Shane Dixon for a very engaging and innovative approach to online teaching. Definitely one of the best and most memorable learning experiences for me!” In fact, because of the course’s engaging, entertaining, and informative approach, of over 1,800 courses on Coursera, it won the ‘Learners First Award’ during Coursera’s First Annual Outstanding Educator Awards in the Partners Conference in 2016 (http://coursera.tumblr.com/post/142019252717/congratulations-to-the-winners-of-courseras-first). ASU’s Teach English Now! Team comprised of Dr. Shane Dixon, Dr. Justin Shewell, Andrea Haraway, and Jessica Cinco was recognized because of their approaches that are ‘remarkably innovative, transformative, or beloved by learners’ in ‘delivering uniquely engaging and high-quality experience’ for the learners. This finding underscores what Mercado-Varela et al. (2017) posited that the facilitators’ high digital and pedagogical competence facilitate successful learning connections in a massive course.

Finally, one of the significant highlights of our online TPD was the engaging and meaningful collaboration with over 100,000 learners from over 170 countries who were also taking the course. We had weekly discussion forums where we could post our comments and concerns, respond to queries, and communicate with our classmates and instructors. In addition, as part of the course assessment, all of our micro teaching video demonstrations and full lesson plans were reviewed by our peers who provided valuable feedback and insights about our outputs using rubrics provided by ASU. Likewise, we also performed the same peer feedback assessment, which taught us how to evaluate our peers’ outputs and provide suggestions so that they could improve their work. An instance of a motivating and affirmative feedback by a MOOC peer was given 12/07/2016: “Great lesson plans and videos! I like that you applied a lot of techniques that we learned in the courses. You included a lot of good resources! Your teacher talk in the videos is good and you’re very enthusiastic!” We also learned how to produce quality outputs based on ASU expert comments, who evaluated our work to ensure that we adhered to the standards set by the course. For instance, an expert feedback dated 11/28/2016 stated: “...I don’t see any reason to just pass someone so that they can fail
outside of the class. As a certified teacher in the State of Arizona, and an expert international Educator at ASU, I know what it takes to create a hire-worthy portfolio having created one for myself…” These peer and expert feedback afforded us impetus to continue our MOOC journey; also, they encouraged and challenged us to perform at our best, which prompted us to reflect on our performance and practice. The MOOC acted as a virtual community of practice that allowed individuals to collaborate and learn with one another. This finding embodies the significant role of e-mentoring in a knowledge-sharing environment, which can lead to transformative learning among participants (Tanis & Barker, 2017) through online dialogues, forums, and feedback.

MOOC-ing, Refracting, Reflecting

Our eight-month MOOC journey has reshaped the way we learn and teach. We realized that online education could be as engaging, effective, and meaningful as offline/face-to-face education. Our experience with ASU-Coursera’s Teach English Now! has taught us that with the right blend of course design, virtual instructors’ approaches, and participants’ motivation to learn and collaborate, the online TPD could be personally, socially, and professionally rewarding. We obtained invaluable ideas, insights, and perspectives that are now guiding our pedagogical practice. Our chat message dated 12/23/2016 affirmed this: “Ito na ang best Christmas gift. Natuto tayo ng marami at libre pa! Di ko inexpect na sobrang fruitful pala ng MOOC. Dami kong kelangan idadagdag at baguhin sa approach ko sa pagtuturo...” [This is the best Christmas gift ever. We learned a lot and it was free! I didn’t expect that MOOC could be so fruitful. I have a lot to improve and change in my teaching approach...“]. Personally, we have felt fulfilled and happy that we were able to accomplish something that we could consider a lifetime achievement. We have broken barriers to TPD despite our limited resources. We were able to improve ourselves through diligence, fortitude, and willingness to learn. Socially, we have felt connected and engaged as we were able to communicate and collaborate continuously during and after the completion of the course with our global peers and instructors via the MOOC’s online discussion forums, Teach English Now! LinkedIn community (https://www.linkedin.com/groups/8572608/profile), and Teach English Now! official Facebook page (https://web.facebook.com/teachenglishnowMOOC/?ref=br_rs). Professionally, we have become more confident as English language educators, as we were able to validate our own pedagogical practice through the help of our peers and instructors who provided us useful and practical suggestions to better our craft. We have also gained knowledge and developed our skills through open educational resources (OERs) and practical tasks. We have felt equipped that we were able to understand the theoretical underpinnings of our own classroom practices guided by the teaching and learning principles discussed in the MOOC. We believe that our MOOC journey is not only a learning experience; it is a transformative event in our personal, social, and professional lives.

Connecting the Dots

Our MOOC experience is a living testimony and contribution to the “relatively novel and unchartered” field of online teacher professional development (oTPD) (Jobe, Ostlund, & Svensson, 2014). As opposed to previous research findings that suggest that several TPD programs lack quality as they offered “fragmented, intellectually superficial” seminars (Borko, 2004, p.3), our MOOC experience proves otherwise. ASU’s Teach English Now! embodies an oTPD that enables improvement of the different aspects of its learners (Whitehouse, Breit, McCloskey, Ketelhut, & Dede, 2006): “subject knowledge, pedagogical knowledge, subject knowledge and pedagogy, critical reflection/beliefs/orientation, standards alignment, skill/efficiency, teacher discourse/collaboration, and practice community.” Furthermore, our experience attests that ASU’s Teach English Now! possesses the seven characteristics of effective
professional development as outlined by Darling-Hammond, Hyler, & Gardner (2017): it is focuses on a specific content, it employs active learning by using theories pertinent to adult learning, it facilitates collaboration, it uses models and provides modelling of best teaching practices, it offers mentoring and support from the experts, it offers opportunities for feedback (both from the peers and the experts) and self-reflection, and it is of substantial duration. The experience that we had with ASU’s Teach English Now!’s innovative course format, dynamic and professional instructors, and collaborative and supportive community of learners made our MOOC oTPD journey worthwhile and rewarding. Our experience suggests that there is a plethora of quality MOOCs that anybody from anywhere in the world can take in order to advance professionally. It also implicates MOOC designers to develop sound curriculum design (Chugh et al., 2017) aligned with international standards and industry requirements and to deploy highly competent virtual instructors (Mercado-Varela et al., 2017) whose effective e-mentoring skills (Tanis & Barker, 2017) and excellent teaching skills may afford learners a worthwhile online distance education experience. Taking into account these considerations may be able to address the three current concerns with MOOCs as outlined by Soylev (2017): completion rates, pedagogy, and certification.

CONCLUSION

Teacher professional development is seen as a keystone in strengthening educators’ performance levels and raising student achievement (Mizell, 2010). However, with increasing costs, lack of resources, and busy schedules, teachers are not always given opportunities to participate in TPDs; hence, there is a need for “online teacher professional development programs” (Whitehouse, Breit, McCloskey, Ketelhut, & Dede, 2006) that will allow customized, self-paced, and expert-supported education. The concept of MOOCs for TPD appears to be a logical and practical answer to this concern. With the ubiquity of modern technologies, innovative MOOCs may prove to be a viable and practical means to afford teachers around the world the opportunity to develop and advance themselves professionally. Harnessing this emerging technology “may be a path to achieving a new educational order” (Mercado-Varela et al., 2017) and may revolutionize the way we view the teaching and learning processes. In this digital era when everything seems to be connected and accessible via the fingertips 24/7, educational and training institutions can tap the technological resources to provide alternative TPD models, employing well-designed programs aligned with global standards, state-of-the-art approaches, expert virtual instructors, and strong technical support team. In the same vein, creators of MOOCs for TPD may need to incorporate latest research on MOOC users’ experience into their course design to ensure higher success rate. The learners, on the other hand, must be cognizant of the many opportunities that abound, explore and take advantage of the modern means of professional development, and maximize their learning with eagerness, determination, and commitment. Furthermore, learners should possess digital competence, self-efficacy, self-management, and self-directed learning to be successful in this type of online education.

It is important to note some limitations of this study. First, this study reflects only the experiences of two MOOC participants in an eight-course specialization certificate for teacher professional development using Coursera MOOC platform. Hence, the findings in this study may limit their external validity to other MOOC participants’ experiences, contexts, and settings. It would be interesting to explore MOOC participants’ experiences across other MOOC platforms, types of MOOCs, and participants’ level of education and digital competence. Furthermore, future studies may investigate MOOCs’ utilization in a large group for teacher training, how MOOC camps can engage the participants and sustain their motivation in completing a course, and how MOOC participants integrate their learning from the MOOC into their pedagogical practices.
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SOCIAL NETWORKING USAGE QUESTIONNAIRE: DEVELOPMENT AND VALIDATION IN AN INDIAN HIGHER EDUCATION CONTEXT

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ABSTRACT

The concept of social networking has received much attention from academia over the last decade in India. Widespread research has conceptualized the term social networking with almost all of the studies either conceptual or based on case studies. This paper is an attempt to clarify the construct of social networking by developing a reliable and valid questionnaire measuring social networking usage. 420 university students from 6 universities in Jammu and Kashmir were surveyed via a random sampling technique and factor analysis carried out on their responses. The findings revealed that social networking usage can be decomposed into four factors: academic; socialization; entertainment and informativeness. The internal consistency indices, Cronbach’s alpha of social networking usage (α= .830) indicates good internal reliability. The findings revealed that the newly developed questionnaire has significant psychometric features.

Keywords: Social networking usage, university students, scale development, factor analysis.

INTRODUCTION

Social networking usage refers to online space that is used by students to connect, share, communicate, establish or maintain connection with others for academic, entertainment, socialization etc. Social networking as a communication medium is rising quickly, mostly in the prosperous increase of applications for mobile devices. Especially young adults are becoming familiar with sharing their everyday life and experiences, keeping in touch with teachers, friends, and family online and talking about their interests (Leung 2002; Morahan-Martin & Schumacher 2003). The past few years have observed an explosion of social networking such as Twitter, Facebook etc. which have added a fresh social dimension to the web. There have been a rapidly increasing number of online connections among groups of persons who share similar interests, though they are assembled in an absolute space (Wilson et.al 2002). A number of social networking sites (e.g., Twitter, Facebook, LinkedIn, Google plus, Orkut, Google plus) have employed dynamic social contexts in which online communities can be made and continued easily by the facilitation of communications and social connections among users. Such networking opportunities help make groups, communities and people with shared interests remain more associated.

In recent years, social networking sites have been the prevalent tools for online communication combining the interpersonal and mass communication competences.
together (Pempek, et al; 2009; Boyd & Ellison, 2007). Social networking sites like Twitter, LinkedIn, and Facebook support online groups that allow users to broadcast and construct their profile information, and interact with others by sending personal and public messages, playing games, and sharing photos (Pempek, Yermolayeva, & Calvert, 2009; Boyd & Ellison, 2007). Social networking sites facilitate individuals, making new online friends and acquaintances, and to maintain pre-existing social connections (Ellison, Lampe, & Steinfield, 2007).

The majority of users of the social networking sites are young people (14 to 25 year olds) who were named by Prensky (2001), as “Digital Natives” especially represented at the moment by students in higher education. These digital natives often use social networking sites to connect with their offline peers to strengthen their existing relations rather than building new relationships, (Ellison, Steinfield, & Lampe, 2007; Waechter, Reich, Espinoza, & Subrahmanyam, 2008). Social networking sites might provide a potential medium to attain deeper online knowledge than conventional e-learning platforms, if educationally-focused actions can be closely integrated into the use of social networking sites (Srivastava, 2012). Moreover, social networking sites allow students to highlight their experiences and talents, and communicate and express themselves better.

The advantages of using social networking sites for educational purpose are far ranging. A study stated that the use of social networking tools improved student’s learning opportunities, allowed for real-time communication outside the classroom, fostered collaborative opportunities, and enhanced creativity (George, & Dellasega, 2011). Learners can watch educationally relevant videos or exchange information about what they have watched and learned, and then join online to further discuss with teachers. Even the teachers can learn from the students during social networking interactions. Similarly, a teacher can supervise students while they are learning, reflecting, sharing, interacting and summarizing discussions. Social networking sites provide a forum to contact peers and teachers from wherever they are, offering the flexibility of extended duty hours. Some social networking sites, especially Facebook, features may boost students to involve in social and creative learning progressions that extend beyond traditional educational settings and institutions (Wiberg, 2007). This provides added benefit to access extensive and different sources of information and opportunities for communication (Anderson, & Dron, 2007). At present, a lot of educational institutions are making use of the advantages of social networks in the teaching and learning process. According to the results of the study conducted by the U.S. Department of Education (2009), the classes using social networks or online systems were found to be more effective than the classes using the traditional face-to-face instruction.

Given the collaborative and interactive nature that describes social networking has tremendous potential for the field of education. Universities and Colleges are beginning to embrace social networking and understanding the potential power and implications for using it in education. Blankenship (2010) indicated that the usage of social networking in education results in many benefits, such as greater student interest, greater student engagement, more responsibility for their education and students take more control over their education. It also indicates that social networking sites support educational activities by creating interaction, collaboration, and active participation. In similar way Abdulahi et al., (2014) & Ahn, (2011) noted that social networking and media tools offer students the opportunity to communicate, access information, get in touch, chat and research. Further Deng and Tavares (2013) noted that social networking has become an integral part of our student’s social life; it is now seen as a learning platform that could be employed to increase student performance and engagement.

However, some studies have shown that social networking usage can lead to a multiplicity of negative consequences like reduction in academic performance, decrease in offline community engagement, and relationship problems (Griffiths & Kuss, 2011, Unachukwu et.al 2016). To examine social networking usage, there seems to be a need for a reliable and valid questionnaire to be developed. So, the sole purpose of this study is to bridge this
gap and validate the developed questionnaire regarding its psychometric properties by specifying its accuracy and consistency of measurement.

PREVIOUS MEASURES OF SOCIAL NETWORKING USAGE

After studying the previous literature of social networking usage it was found that several measurements had been developed to investigate the social networking usage. One instrument, developed by Pornsakulvanich, et.al (2013), explored six components as, friendship, passing time, relationship maintenance, in trend, entertainment and relaxation. This scale was used to assess a degree to which individuals graded their specific aims for using social networking sites. Moreover, a quantitative survey questionnaire on social networking was standardized by Eid, et al; (2016), which explored four categories as enjoyment and entertainment, file sharing, content creation, online discussion, and chatting. Moreover, Jenkins-Guarnieri, et al (2013) standardized a scale on online social media use that assesses the daily routines of users, combination of the social behavior, along with the emotional connection and importance of to this use, but this scale is not suitable to measure our construct. In the Indian context, Bolar (2009) developed a questionnaire based on 28 statements, on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). This scale is actually based on the purpose of social networking sites usage. In addition, Shi et al (2014), standardized a scale on social networking sites usage. The scale contains two subscales; an affective experience scale and a featured usage scale. Another instrument by Shin et al (2017) aimed to measure the social network site use motives of college students. The scale consists of 30 items written in Korean, each representing one of the six subscales, which are information, enjoyment, social, mood regulation, pastime, and conformity. Different authors standardized their own scales by using exploratory factor analysis (EFA).

However, so for nobody has completed a confirmatory factor analysis (CFA), or provided detailed psychometric statistics such as test-retest reliability coefficient estimates. Other authors have provided only vaguely-defined measures (Shin, et.al 2017), and did not offer detailed psychometrics (e.g., Eid, et al. 2016; Shy, et al. 2014 & Pornsakulvanich, et al. 2013), making evaluations of their instruments difficult. Neither have they provided any comprehensive documentation of how they progressed through the formal procedures for scale development and validation. Moreover, Shy, et al. (2014), points out to the lack of association with other social networking sites questionnaires and examination of the test-retest reliability. In addition, Shin et al (2017) used only self-reported data to assess SNS addiction levels, and the time spent using SNSs was not included in the assessment of SNS addiction. Jenkins-Guarnieri, et al. (2013) used a nonrandom sample, composed of voluntary participants, which may have produced significant selection biases.

There are also scales which have been developed and used to determine the usage of specific social networking sites; in particular Facebook. The Facebook intensity scale developed by Ellison, et al (2007)_contains two self-reported assessments intended to assess the degree to which respondents are keenly involved in Facebook, with six attitudinal items aiming to measure the degree to which respondents are passionately engaged in using Facebook and the amount to which Facebook is integrated into their everyday practices. Moreover, Andreassen et al (2012) standardized a scale on Facebook addiction based on 18 items with six elements (modification, salience tolerance, mood, withdrawal, relapse, and conflict). Ross et al (2009) standardized a Facebook Questionnaire that includes attitudes associated with Facebook, posting of individually-recognizing, information, and basic use of Facebook.

Ellison, et al (2007) conducted neither a confirmatory factor analysis (CFA) nor an exploratory factor analysis (EFA) on their instrument, and they did not provide detailed psychometric statistics such as convergent validity, discriminate validity, and test-retest reliability coefficient estimates. In the study of Ross et al (2009), the low internal consistency, may have caused underestimation of associations among theories. Moreover, Andreassen et al (2012) developed a scale, and provided detailed psychometric statistics,
but the statements of the scale have too much ambiguity. Most of the research on Facebook usage thus far has used psychometrically-weak measures. Based on scale development theory (DeVellis, 2016), even the most recent research published in peer-reviewed journals have used somewhat lacking assessment measures to operationalize Facebook use. Additionally, much previous research in this has poor reliability estimates and high measurement error. None of these studies conducted rigorous psychometric analyses before using the data collected from their new measures to answer subsequent research questions.

Whereas a number of social networking scales have been developed, no such scale has been constructed specifically for our context. This study will fill the gap, and present a set of items which have been checked to have direct applicability to the Indian context. Because social networking usage has positive and negative consequences for university students, it is important for researchers to ascertain the university students' level of social networking usage. The review of the literature demonstrates that numerous studies have been done on this said construct but it is essential to confirm the validity of the constructs even if well-established measures are involved (Hair, et al., 2010). With the purpose of decreasing error by improving reliability and validity, better explanations and more accurate predictions can be made through multivariate statistical analysis. Various methods can be found under multivariate methods and depending on the methods of analysis, different types of statistical approaches can be used (Hair, et al., 2010). This study explicitly explores the social networking usage behavior among university students by following the highly reliable and valid scale development procedures of Hinkin (1995) and Churchill (1979).

ITEM GENERATION PROCEDURE

Based on our theoretical framework, we developed statements related to social networking usage. The generated statements intended to capture social networking usage of university students. Therefore, the summated assessment procedure proposed by Likert (1932) was used to develop the present scale. We identified 56 items related to social networking usage from previously developed instruments. These were aligned so they could all be answered using a 5-point Likert scale, with each statement rated on five anchors, (Always=5, Often=4, Sometimes=3, Rarely=2 and Never=1). The above extensive literature review guided us in producing an instrument with robust psychometric properties to measure the social networking usage of university students. It is much helpful for these items to be strong when used in a Likert format (DeVellis, 2016).

Respondents

To pilot the instrument, a group of respondents were recruited from 6 universities from Jammu and Kashmir, India. The total number of respondents in the study comprised 420 university students (i.e. N=420), 220 male and 200 females, who were selected via random sampling technique. Initially, out of three divisions in Jammu and Kashmir, two divisions were selected randomly. Then universities in the division were selected randomly. From those universities several students were picked up randomly as participants. The sample comprises of students from different universities from Jammu and Kashmir covering post-graduate students particularly in the age range of 21-23. There was an equivalent representation of students from different streams such as sciences and engineering, management and commerce and arts & humanities, selected by employing the simple random sampling technique. The aim of the study was conferred and the concerned higher authorities were contacted. Participants were motivated to complete the questionnaire with humble request. In the initial study 442 questionnaires were distributed, and merely 433 participants’ responses were returned. The returned questionnaires were carefully checked for comprehensiveness, respondent detachment, misplaced outliers and values (Hair et al. 2010). Eleven questionnaires were rejected due to missing information. The final and scoured dataset contained of 420 responses out of 420 students, 220 male and 200 females.
Content Validity

Content validity was established at the time of developing a preliminary draft of the research instrument by carrying out critical discussions with nine experts who reviewed, 56 statements selected for the first draft. The contents of each item were critically examined by these experts to review the suitability and relevancy of these items for a social networking usage questionnaire. Only those statements were retained for the second draft which had at least 75%-85% agreement among experts with regard to relevance of items. The experts were of the opinion that the remaining 42 statements were completely satisfactory and relevant to measure the social networking usage of university students in India, confirming the social networking usage questionnaire was a sufficiently valid instrument for piloting.

Exploratory Factor Analysis

The next step in the refinement stage was to conduct exploratory factor analysis (EFA). EFA provides information about the amount of constructs required to represent the data. Exploratory factor analysis helps discover the probable original factor construction of a set of observed variables not having imposing a predetermined structure on the consequence (Child, 1990). We explored the factors of social networking usage through exploratory factor analysis. Numerous iterative cycles of factor analysis were conducted on the data set. The total variance and numbers of factors extracted were examined after each iteration. Factors with low communalities which didn’t correlate were deleted with the purpose of refining the factor structure to get a matrix with clearer loadings. We used the principal component matrix (PCA), and for rotation used the Varimax method. With this, we checked the factorability of the 42 statements. After performing the exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was calculated .888. According to Tabachnick and Fidell (1996) the minimum Kaiser-Meyer-Olkin (KMO) for a good factor structure should be 0.60. A negligible significance level was shown by Bartlett’s test of sphericity. Both measures suggest that the sample data were adequate for the performing factor analysis. The detailed report is presented in Table 1.

Table 1

<table>
<thead>
<tr>
<th>KMO and Bartlett’s Test</th>
<th>.888</th>
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<tr>
<td>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</td>
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<tr>
<td>Bartlett’s Test of Sphericity</td>
<td>Approx. Chi-Square</td>
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<td></td>
<td>Sig.</td>
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Factor Structure: The factor analysis indicates a five factor structure, explaining 53.20% of the variance, with all items loading above .40. (Acceptable item loading of above sample 350 is 0.40 (Heir et al 2007). The first factor comprised the academic items (7 items), the second factor comprised items relating to the socialization (6 items), the third factor consisted of the items related to entertainment (4 items), the fourth factor consisted of the items related to informativeness (3 items), and the fifth factor related to constraints (4 items). The items and their factor loadings are presented in Table 2.
Table 2. Statements of Social Networking Usage Questionnaire and Their Factor Loadings

<table>
<thead>
<tr>
<th>Items</th>
<th>Statements</th>
<th>Factor Loadings</th>
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<tbody>
<tr>
<td>Item 39</td>
<td>I use social networking sites to solve my academic problem.</td>
<td>.670</td>
</tr>
<tr>
<td>Item 33</td>
<td>I use social networking sites to do research work.</td>
<td>.648</td>
</tr>
<tr>
<td>Item 28</td>
<td>I use social networking sites for online academic group discussion.</td>
<td>.646</td>
</tr>
<tr>
<td>Item 35</td>
<td>I communicate with my friends via social networking sites for preparation of exam.</td>
<td>.645</td>
</tr>
<tr>
<td>Item 38</td>
<td>I use social networking sites for collaborative learning.</td>
<td>.560</td>
</tr>
<tr>
<td>Item 34</td>
<td>I use social networking sites to learn about my curricular aspect.</td>
<td>.530</td>
</tr>
<tr>
<td>Item 14</td>
<td>I use social networking sites to seek help from my teachers.</td>
<td>.499</td>
</tr>
<tr>
<td>Item 08</td>
<td>I use social networking sites to become more sociable.</td>
<td>.680</td>
</tr>
<tr>
<td>Item 25</td>
<td>I use social networking sites to create my social identity.</td>
<td>.673</td>
</tr>
<tr>
<td>Item 26</td>
<td>I prefer using social networking sites to attending social gathering.</td>
<td>.622</td>
</tr>
<tr>
<td>Item 10</td>
<td>I use social networking sites for strengthening interpersonal relationships.</td>
<td>.543</td>
</tr>
<tr>
<td>Item 11</td>
<td>I use social networking sites to keep in touch with my relatives.</td>
<td>.522</td>
</tr>
<tr>
<td>Item 27</td>
<td>I use social networking sites to get information regarding current social events.</td>
<td>.512</td>
</tr>
<tr>
<td>Item 32</td>
<td>I use social networking sites for sharing pictures.</td>
<td>.686</td>
</tr>
<tr>
<td>Item 42</td>
<td>I use social networking sites to look at funny sharing.</td>
<td>.683</td>
</tr>
<tr>
<td>Item 37</td>
<td>I use social networking sites for watching movies.</td>
<td>.587</td>
</tr>
<tr>
<td>Item 36</td>
<td>I use social networking sites to get relief from academic stress.</td>
<td>.577</td>
</tr>
<tr>
<td>Item 30</td>
<td>I use social networking sites for reading news.</td>
<td>.714</td>
</tr>
<tr>
<td>Item 23</td>
<td>I use social networking sites to share new ideas.</td>
<td>.626</td>
</tr>
<tr>
<td>Item 16</td>
<td>I use social networking sites for getting jobs related information.</td>
<td>.422</td>
</tr>
<tr>
<td>Item 21</td>
<td>I face difficulty in finding exact information for academic via social networking sites.</td>
<td>.709</td>
</tr>
<tr>
<td>Item 12</td>
<td>Compulsive usage of social networking sites is a problematic issue.</td>
<td>.664</td>
</tr>
<tr>
<td>Item 19</td>
<td>I usually postpone my academic task for spending more time on the social networking sites.</td>
<td>.621</td>
</tr>
<tr>
<td>Item 17</td>
<td>While using social networking sites it is difficult for me to concentrate on my studies.</td>
<td>.582</td>
</tr>
</tbody>
</table>

CONFIRMATORY FACTOR ANALYSIS

The confirmatory factor analysis by Sorbom, & Joreskog (2004) is a different case of Structural Equation Modeling which is called the “linear structural relationship model.” Confirmatory factor analysis is a handy statistical process for providing validity evidence (Gerbing, & Hunter 1982), which is applicable when constructs are assessed with several items, when the scale statements have a linear association to the scale total or average, and when an examiner has an a priori knowledge of which statements measure which constructs. Confirmatory factor analysis is a statistical method...
used to confirm the factor structure of a set of observed variables. CFA permits the researcher to test the hypothesis that an association with the underlying latent constructs and observed variables exists (Suhr, 2006).

Using the SPSS Amos 22 version, the confirmatory factor analysis was applied to the five factors extracted in the exploratory factor analysis. The indices of the model were (CMIN/DF=2.193, Comparative Fit Index (CFI) =.887, Goodness Fit Index (GFI) =.926, AGFI=.904, Root Mean Square of Approximation (RMSEA) =.053, and Chi-square=320.240 (p>0.01). The final CFA model is on four factors. The inspection of the results revealed that the factor loadings of three statements of that factor were below the threshold value. As this only left one statement, and because it is accepted that any factor with less than three statements should be deleted, the four statements of constraints factor was deleted (Hair et al; 2010). Figure 1 provides a holistic view of the confirmatory factor analysis model.

Figure 1. Confirmatory Factor Analysis
Reliability Analysis
The Cronbach’s alpha is used to measure the internal consistency among the items. According to Gliem & Gilem (2003), the reliability coefficient Alpha normally ranges between 0 and 1. The rule of thumb specified by George & Mallery (2003) for interpreting Cronbach’s alpha is that “above 0.80 is acceptable.” Hence, the present scale Cronbach’s alpha of social networking usage (α= .830), indicates good internal reliability. Thus our reliability analysis suggests that social networking usage questionnaire is internally consistent. The reliability calculations are presented in Table 3.

Table 3. Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>Number of Statements</th>
</tr>
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<tr>
<td>.830</td>
<td>19</td>
</tr>
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</table>

Convergent Validity
Pearson’s coefficient of correlation, calculated to identify levels of significance between factors, revealed higher levels of significant positive correlations for all dimensions of social networking usage (Academic, Socialization, Entertainment and Informativeness) with total score of social networking usage. The interrelationship of these dimensions and the total scores, calculated as suggested by Overbeek, Scholte, de Kemp, & Engels (2007), and found to be .593 to .894, suggest convergent validity of social networking usage questionnaire. Refer to Table 4.

Table 4. Convergent Validity of Social Networking Usage Questionnaire

<table>
<thead>
<tr>
<th>Measure</th>
<th>Academic</th>
<th>Socialization</th>
<th>Entertainment</th>
<th>Informativeness</th>
<th>Total score of social networking usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>1</td>
<td>.563**</td>
<td>.558**</td>
<td>.447**</td>
<td>.894**</td>
</tr>
<tr>
<td>Socialization</td>
<td>1</td>
<td>.420**</td>
<td>.559**</td>
<td></td>
<td>.783**</td>
</tr>
<tr>
<td>Entertainment</td>
<td>1</td>
<td></td>
<td>.233**</td>
<td></td>
<td>.737**</td>
</tr>
<tr>
<td>Informativeness</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>.593**</td>
</tr>
</tbody>
</table>

**Significant at 0.01 level

CONCLUSION AND DISCUSSION

The questionnaire developed in this study can help improve the measurement of university students’ social networking usage in today’s turbulent and changing environments. India witnessed a remarkable and rapid advancement in ICT, and Indian university students engage in online sources intensively.

The present study aimed to develop and validate a social networking questionnaire in order to understand the purposes of social networking usage of university students in an Indian context. The study draws on a broad literature review of studies measuring social networking usage in a range of educational contexts. This paper has presented the rigorous methodological procedure carried out to develop and quantitatively validate a method measuring Indian university students’ social networking usage. Our scale not only has adequate statistical support but also has sufficient theoretical support. The factors extracted through exploratory factor analysis and validated through confirmatory factor analysis also have similar references in empirical studies. The “academic” factor was used
in another study (Kio, 2016), “socialization” was used by a number of researchers (Pornsakulvanich, et al., 2013; Wijesundara, 2013; & Park, 2015), “entertainment” was used by various researchers (Eid, et al; 2016; Griffiths 2002; Sridhar 2016, Wijesundara, 2013; & Pornsakulvanich, et al; 2013), and finally, “informativeness” was used by Eid et al (2016), Mahajan et al (2016), Sridhar (2016), and Park (2015). Finally, the evidence of this measurement suggests that this questionnaire has robust psychometric properties to measure social networking usage among university students. This study will give academicians much needed tools and a fresh empirical perspective in their empirical research on the concept of social networking usage. Social networking and media can provide rich tools for teaching innovation and compiling ways to engage students effectively (APA, 2011). The results of previous empirical studies show that educators should embrace social media (Ito et al., 2009). Students are recommended to use it to connect with other students for group projects and homework (Boyd, 2008). Social media allow students to get together outside the class to collaborate and exchange ideas about their assignments and projects (O’Keeffe & Clarke-Pearson, 2011). Moreover, researchers have tackled diverse ways and methods where social networking could be utilized in education. These methods included gaining more vocabulary and writing skills (Yunus et al., 2013), resources with fellow students, discussions and exchanging assignments (Asad et al., 2012), communicating, exchanging ideas with fellow students and formulating group discussions (Salvation, & Adzharuddin, 2014).

The practical implication of the results is that the effort towards endorsing social networking usage for academia is significant in a bid to improve a sense of knowledge sharing among students, which leads to enhanced student learning. To attain this, we believe that educational institutes should work hard to organize seminars or orientation courses to encourage the positive and productive social networking attitudes and practices both by students and instructors. This study also provides some empirical evidence and guiding information for educational management staff and government professionals to better understand their social networking users’ needs so that they can come up with efficient frameworks or policies.

LIMITATIONS

Even though we used highly reliable and valid scale development procedures informed by those of Henkin (1995), and Churchill (1979), there are still some limitations. The first limitation is that both the techniques of the scale refinement, of exploratory factor analysis and confirmatory factor analysis, are quite sample-size specific. This study has a rationale and proper literature support for applying these techniques, but in order to have better results a bigger sample size is advisable. The study measures four sub constructs of social networking usage, and the present scale is based on five- point Likert scale development. Further research is needed to support the discriminant, and concurrent validity. In order to validate the proof of discriminant validity, researchers should compare the shared variance in every pair of construct against the average variance extracted (Bove et al. 2009).

SUGGESTIONS FOR FURTHER RESEARCH

Given the prevalence of social networking usage in India, further research must seek to determine this questionnaire’s appropriateness for use with other populations of social networking users. There are also anticipated benefits for teachers in using the scale with their university students to better understand their social networking usage. This would best be achieved by studying teacher’s attitudes and opinions regarding social network use in university for academic purposes. Together, such research data might inform a more harmonized approach between students and teachers to inform situations when universities formally introduce social networking as part of their ICT solutions. A further qualitative study could be conducted based on this questionnaire to uncover the usage associated with these changes, offering insights into the patterns of use. Further research can be conducted to determine the relationship of social networking usage with the academic performance of students.
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REFERENCES


APPENDIX

SOCIAL NETWORKING USAGE QUESTIONNAIRE

Please fill up the following information:
Name______________________________________ Class_____________________________________
Age_________________ Gender__________________
Urban/Rural________________ Stream: Arts/Science/Commerce____________________________
Name of College/University____________________________ Previous Exam Marks____________________
Previous Exam Percentages____________________________

INSTRUCTIONS

This is a questionnaire that attempt to measure the social networking usage of an individual. The items of the scale are given in statement form. You are requested to read each statement carefully and give your response by putting a tick (√) mark only that option which you find that is most appropriate and true in your case. There is no right /wrong answer.

Example:
I use social networking sites for sharing pictures. Always          Often         Sometimes       Rarely      Never

In the above statement, if you feel the correct response could be Always, then put tick (√) in that column. Please do not leave any statement unattempt. There is no time limit. Your responses will be used for research purpose only and the responses will be always kept confidential.

<table>
<thead>
<tr>
<th>Sr</th>
<th>Statements</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
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<tr>
<td>01</td>
<td>I use social networking sites to become more sociable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>02</td>
<td>I use social networking sites to keep in touch with my relatives.</td>
<td></td>
<td></td>
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<tr>
<td>03</td>
<td>I use social networking sites to seek help from my teachers.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>04</td>
<td>I use social networking sites for getting jobs related information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>I use social networking sites to share new ideas.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>06</td>
<td>I use social networking sites to create my social identity.</td>
<td></td>
<td></td>
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<tr>
<td>07</td>
<td>I prefer using social networking sites to attending social gathering.</td>
<td></td>
<td></td>
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<tr>
<td>08</td>
<td>I use social networking sites to get information regarding current social events.</td>
<td></td>
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<tr>
<td>09</td>
<td>I use social networking sites for online academic group discussion.</td>
<td></td>
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<tr>
<td>10</td>
<td>I use social networking sites for reading news.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I use social networking sites for sharing pictures.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I use social networking sites to do research work.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I use social networking sites to learn about my curricular aspect.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>I communicate with my friends via social networking sites for preparation of exam.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15</td>
<td>I use social networking sites to get relief from academic stress.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>16</td>
<td>I use social networking sites for watching movies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>I use social networking sites for collaborative learning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>18</td>
<td>I use social networking sites to solve my academic problem.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>19</td>
<td>I use social networking sites to look at funny sharing.</td>
<td></td>
<td></td>
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BOOK REVIEW

MARKETING STRATEGIES
FOR HIGHER EDUCATION INSTITUTIONS:
TECHNOLOGICAL CONSIDERATIONS AND PRACTICES
Edited by Purnendu Tripathi and Siran Mukerji

Dr. Nur OZER CANARSLAN
Open Education Faculty
Anadolu University
Eskisehir, Turkey

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INTRODUCTION

Higher education marketing is a growing field of practice, but may suffer from a lack of theoretical discourse. This book, entitled “Marketing Strategies for Higher Education Institutions: Technological Considerations and Practices” edited by Tripathi and Mukerji, applying the concept of marketing in the field of education by distinguishing business sector and education sector. The book contains 20 chapters and 366 pages which covers a wide variety of topics.

The book is well written in the sense that links the technological advancements and marketing strategies, in all parts of education, including K-12, non-formal and distance education. One of the real strengths of the book is that it draws the readers’ attention to the marketing strategies which can be applied to higher education.

REVIEW OF THE BOOK

Chapter 1: What is the Secret of Successful University Brands?
In this chapter it is aimed to generate constructs to determine what makes a successful university brand, and subsequently testing these among a larger sample of university “customers.” Findings demonstrate the constructs that compose successful university brands.
and the significant interrelationships of these variables. These constructs included reputation, progressiveness, professionalism, accessibility and corporateness.

Chapter 2: Marketing Educational Programs through Technology and the Right Philosophies
This chapter uses a real case to exemplify that marketing educational programs through technology and right philosophies adopted. Relationships between seven philosophies (liberal philosophy, behaviorist philosophy, progressive philosophy, humanist philosophy, analytic philosophy, radical philosophy and postmodern philosophy) and different types of universities/colleges are drawn. Finally, the author suggested that universities/colleges need to seriously consider hiring managers with right philosophies so that they work towards achieving the mission of higher education institution.

Chapter 3: Business Lessons for Higher Education Marketing
Authors state that recent business marketing approaches dependent on market analysis and planning have motivated the growth of marketing firms offering sophisticated quantitative market analyses so as to identify an organization’s potential and current customers and their needs. However, the analytical study contrasts that educational service provider to enrollment outcomes at two nonprofit higher education institutions.

Chapter 4: Identifying the Basis for Segmenting Higher Education: Evidence from Egypt
This chapter aimed to discover the dimensions which can be used to segment the university system in Egypt. The authors found that perceived quality and level of internationalization are the two important factors for distinguishing universities and they identify a four classification system of universities; “legacy”, “prestige”, “imitators”, and “the uncertain”.

Chapter 5: A Mobile Market: Opportunities and Strategies in Higher Education
This chapter explores the growing importance of mobile technology in higher education. Chapter focuses on understanding the role of this technology in connecting with prospective and current students. Finally, authors identify mobile application features have value for current students and it is an important channel for reaching students.

Chapter 6: Mediating Effects of Study Outcomes on Student Experience and Loyalty: A Comparison of Home and International Students
This chapter explores the relationship between student experience and loyalty. Based on a study, authors discover that home students and international students share much in common in terms of their expectations of the university image, facilities for career preparation, and personal and academic development. However, the paper identifies subtle differences and suggests the development of what the authors term a “Gestalt student experience.”

Chapter 7: They’re Here, Now How Do You Keep Them? Lessons Learned with First Year College Students
In this chapter authors aimed to specify the factors which influence students’ attitudes and retention throughout their higher education years and also specifying the ways of improving student retention. The results showed that while many factors affect simple measures of enlistment and peer-mentoring fared best to positively influence student attitudes and responses in the college-orientation class, and peer involvement offered the most promise of future brand commitment to student retention at the university.

Chapter 8: How Technologies Can Localize Learners in Multicultural Space: A Newly Developed “Global Studies” Curriculum
This chapter identifies ways in which technological innovations can be used to improve the suitability of global learning with the help of a newly developed online-supported curriculum, “Global Studies”. This curriculum considers the necessities of interdisciplinary, intercultural, and interparadigmatic learning.
Chapter 9: Higher Education Marketing: A Study on the Impact of Social Media on Study Selection and University Choice
This chapter presents the results of a study that identifies the role and importance of social media on the choice of future students for a study and university in comparison with the traditional university marketing channels in The Netherlands. Finally three market segments identified among future students based on their use of the social media.

Chapter 10: Using Social Network Sites for Higher Education Marketing and Recruitment
This chapter analyzes how the rapid penetration of Social Network Sites (SNSs) into the daily life affects higher education marketing. Authors discussed the history of SNSs, perceived effectiveness of SNSs for student recruitment, prevalence of SNSs in other regions and countries and finally the concerns and barriers in the use of SNS.

Chapter 11: The Use of Facebook as a Marketing Tool by Private Educational Institutions in Singapore
This chapter explores Facebook’s potential for generate “shared cultural meaning” of the brand. The results of the study show that marketing on SNSs remains in its infancy. The majority of visitors were using these sites as an extension to existing mediums for looking information, so there is clearly the potential for the educational institutions to move to the next level in leveraging on SNSs to engage their members and generating a shared cultural meaning of their brands.

Chapter 12: Marketing to and Developing Faculty Members to Create High Quality, Highly Interactive Online Courses
This chapter focuses on ways of developing high quality online courses by faculty members, who redesign their course in order to offer them in a high quality online environment. This creates highly engaging online learning opportunities, which are better than face-to-face classes.

Chapter 13: Increasing Graduate Education Relevance through Innovative Marketing: Interview with Mike Scorzo
This chapter investigate how innovative collaborations encourage interdisciplinary flexibility, within and beyond traditional higher education circles, which can be used to develop academically rigorous graduate programs.

Chapter 14: E-Service Delivery in Higher Education: Meeting MBA Student Expectations
This chapter focuses on how to meet MBA student expectations of website effectiveness through an efficient e-service delivery in Higher Education. Using another innovative KANO approach, they engaged 110 MBA students who identified 23 features that characterize ideal college websites. The paper provides useful advice and perspectives on management and design to those who have the responsibility of designing and developing websites in universities.

Chapter 15: Technology in Marketing Education: Insights from Sales Training
This chapter highlights on the ways the company training programs provide insights for university classrooms. The research suggests that university learning environments focused on business should utilize technology as appropriate to learning goals, but should not indecently replace traditional classroom learning activities.
Chapter 16: Service Recovery Encounters in the Classroom: Exploring the Attributes of Professors Desired by Male and Female Students
This chapter explores how to decrease failure amongst students through understanding the student gender factor. The paper discovers that both male and female students value staff, who demonstrate expertise, show friendliness and empathy and also female students prefer more communal approaches to problem solving while their male counterparts show preference for quick fix solutions.

Chapter 17: You Name It: Comparing Holistic and Analytical Rating Methods of Eliciting Preferences in Naming an Online Program Using Ranks as a Concurrent Validity Criterion
This chapter identifies ways to solicit and analyze student ratings and perspectives on programs and faculty. For this, current and prospective students of the university were surveyed about their preferences. Preferences for each of five names were solicited via analytical ratings, holistic ratings, and rankings.

Chapter 18: Co-Constructing a Learning Community: A Tool for Developing International Understanding
This chapter explores the development of professional understanding across a large group of professionals and academics from eight different countries engaged in an international project. The study was focused on developing a suite of appropriate electronic tools to support the wide range of professionals.

Chapter 19: Assessing Learning via Web 2.0 Technologies: A Dichotomy
This chapter gives examples of online assessments from both andragogical and pedagogical methods. The authors in the study state that since traditional age students learn differently from non-traditional age students, educators are accordingly encouraged to employ either pedagogical or andragogical assessment methods.

Chapter 20: Lighting the Fires of Entrepreneurialism? Constructions of Meaning in an English Inner City Academy
This final chapter aims to refine the conceptual understanding of entrepreneurialism in the context of public education. The authors point out the effects of power in forming the discourse and meanings around entrepreneurialism and the presence of both business entrepreneurialism and alternative groundings for entrepreneurialism. It concludes by refining the typology of entrepreneurialism, placing it in the context of levels of meaning, and suggesting three implications for schools and educational policy.

CONCLUSION
Marketing has gained much importance in the field of education because competition in educational institutions has increased and attracting prospective students and satisfying and retaining existing students harder than ever.

All in all, this book will be a valuable source of interest to academicians and practitioners who aim to have information about various marketing strategies applied to higher education institutions.
Dr. Nur OZER CANARSLAN is currently working as a Research Assistant in the Department of Economics and Administrative Programs, Open Education Faculty at Anadolu University. She holds a Ph.D. in the field of Marketing at Social Science Graduate Institution of Anadolu University. Her primary research interests include online marketing, mass customization, customer behavior and customer experience.

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REFERENCES

BOOK REVIEW
CULTURE AND ONLINE LEARNING:
GLOBAL PERSPECTIVES AND RESEARCH
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INTRODUCTION

As distance education and online learning applications remove numerous borders such as place, time, teacher in the process of learning-teaching, and provide participants with flexible learning environment and opportunities, the learners/teachers having many different characteristics can find opportunity to make communication and interaction with each other and can share the same learning environment. This situation sets forth the fact that culture is an important factor required to be taken into account while designing, developing, presenting, planning and researching online learning and distance education processes. Furthermore, the case in point rises in importance by massive open online courses (MOOCs), open course materials, international or local distance education applications of the companies or institutions that ever increase, in particular in recent years. For this reason, the issues regarding culture in the field of distance education are required to be examined more in detail, to be discussed within a holistic view and to be reflected on online learning/teaching processes by evaluation. In this context, the book Culture and Online Learning provides many different people from researchers to online learning designers, from support staff to administrators and to learners with important and useful information regarding cultural issues in online learning.

REVIEW OF THE BOOK

In the first chapter of the book, Perspectives on Culture and Online Learning, Gunawardena and Jung mention about the importance of complex, abstract and variable structure of culture and inform reader briefly about each perspective, study findings and landmarks regarding cultural issues having an influence on online learning processes, to
be also discussed in further chapters. In other words, it could be suggested that the chapter is a useful introductory that can address readers having different knowledge levels who want to obtain information or make researches about cultural issues, and that highlights both the issues discussed in the book and the points required to be considered about culture.

In the second chapter, Cultural Influences on Online Learning, Jung scrutinizes and presents to the reader the different cultural contexts and learning-teaching approaches that will clarify the cultural factors affecting both learning and online learning. Jung, in the chapters on relation of culture with learning and online learning, mentions about the influences of cultural and multicultural experiences and subcultures, and lays emphasis on the gender factor, giving coverage to the findings of the study conducted by different researchers. Besides, touching upon the relation of culture with the learning context and mentioning socially constructed culture of learning that was developed depending on the technological applications, Jung attracts attention to the fact that culture should be studied from different viewpoints other than those determined in online learning.

In the third chapter, Culture and Technology, Jung handles online learning as a new and innovative technology, and states about the influences of culture, which is a significant factor on the acceptance and use of such new technology. While framing the subject, he mentions the diffusion of innovation theory and the technology acceptance model relating to this theory. Besides, making reference to The Unified Theory of Acceptance and Use of Technology that unifies these theories and models, some factors that are closely in relation with culture for the acceptance of technology are emphasized. Likewise, the studies concerning the acceptance and the use of technology are comparatively referred and recommendations are made in the light of all these information specifying the points that are worthy of notice concerning easier acceptance and use of online learning in different cultures in terms of teachers and learners.

In the fourth chapter, Online Identity and Interaction, Gunawardena examines the informal use of the medium in different cultural contexts (Morocco and Sri Lanka) and refers to the study that discusses the question of how identity creation takes place in such mediums and the sociocultural factors concerning identity creation, and makes implications for designing social environments regarding online learning communities, in line with the findings obtained from the study. In the study conducted in two different cultures, the expression and formation of identity as a major theme that shaped the online informal interactions are studied under three subthemes associated with this major theme as "trust building, self-disclosure, and face negotiation". Also, the relation of gender in terms of identity and major theme and subthemes are mentioned and discussed within the context of literature. In line with the findings obtained from the study, it is stated that the study could help determination of the communication models for virtual culture and online identity formation, by making implications for designing the social environment in the international online learning.

In the fifth chapter, Emerging Visual Culture in Online Learning Environments, Rha mentions about online visual culture that emerge during the use of digital technologies as supplementary by both teachers and learners. Rha defines online visual culture as "the meaning-making process of visual objects that are presented online or on digital devices and its resulting ideas and behavioral patterns, digital technologies have become an essential basis for online visual culture" (p. 46). Online visual culture is a participatory culture where both learners and teachers can actively participate in both the consumption of and the creation of visual data (p. 48). A text as visual object is also examined in the chapter, and the attention is drawn on the use of characters, abbreviations, pictograms and phonogram that are used as a mixture of spoken and written languages in the online environment. In the light of all these information, some suggestions were offered to online educators in terms of culture for designing and developing online learning.
In the sixth chapter, *Accounting for Culture in Instructional Design*, Frechette, Layne and Gunawardena suggest online learning and online design models that take culture into consideration, and mention about WisCom model that is named as a culturally sensitive instructional model developed by researchers. The instructional models mentioned in the chapter include the culture-based model (CBM) consisting of eight interrelated processes developed by Young (2008, 2009) as well as cross-cultural learning experience design model developed by Chen et al. (2006) focusing on teachers, students and the interaction between such two groups. It was also stated that Chen et al. identified three kinds of support systems (technical support, learning support, and social support) and three kinds of resources (language, culture and context).

The instructional design models are examined in this chapter as result of the literature survey, and they are divided into four levels in terms of cultural inclusivity. These are;

- **Level 1**: The model doesn’t directly address cultural factors, but it implicitly caters to the cultural values of its creator(s).
- **Level 2**: The model is explicitly designed for a particular culture, which may or may not match the model creator’s culture(s).
- **Level 3**: The model is designed for different cultural contexts, though not multiple contexts within a single course or learning experience that has been designed with the model.
- **Level 4**: The model is designed to create multicultural learning experiences) (p. 57).

Besides all those, Wisdom Communities instructional design model that is developed for collaborative online learning experiences was also mentioned in the chapter, and in line with the findings obtained as result of the study, recommendations were made for designing culturally inclusive online courses.

In the seventh chapter, *Facilitating Online Learning and Cross-Cultural E-Mentoring*, it is mentioned that Gunawardena and Jayatilleke conducted activities based on online collaborative learning (OCL) between two different cultures (American and Sri Lankan) alongside a study covering knowledge building processes. The role of e-mentoring, the cultural issues that emerged during the process of e-mentoring and challenges to cross-cultural e-mentoring are examined in the study and the implications are made for designing cross-cultural e-mentoring depending on the findings obtained. The social presence, help-seeking behaviors and silence factors that have an impact on the sociocultural environment for OCL are also explored in this chapter.

In the eighth chapter, *Supporting Diverse Online Learners*, Gunawardena explore the provision of learner support in the online learning environments where learners from different cultures take place. In this chapter, the learner support concerning various learner needs was explored in terms of educational expectations, learner preferences, online interaction and knowledge construction, gender, language and second-language speakers, learners with disabilities, and is discussed through findings of the study conducted on these issues. In this chapter, four support types are mentioned by Dillon and Blanchard (1991) that are required to be taken into consideration in the learner support system for distance learners. These types are expressed as:

1. learner support that addresses learner needs (such as cultural background, expectations, learning styles, motivation, self-concept, self-efficacy, belonging, and financial needs),
2. learner support that addresses the needs of the content (such as support for learning activities and laboratory experiences),
3. learner support related to the institutional context (such as enrollment, library access, use of facilities), and
A framework for addressing diverse learner needs in an online course developed by Gunawardena, Kulasekara, and Fernando is introduced. In addition to this, recommendations are made for the design and integration of learner support into online learning.

In the ninth chapter, *Diversity in Expectations of Quality and Assessment*, the quality issues in online learning are discussed. Defining quality in different ways states also that it would change depending on different evaluations and expectations. In this context, Sangrà, Porto and Jung discuss in different sociocultural contexts (Asian, European and American context) the quality factors that become prominent in online learning. In this process, the online quality assessment approach that was suggested by Harvey and Knight (1996) and is consisting of three dimensions (institutional, stakeholders and quality assessment approaches) is taken into consideration. The third dimension of quality assessment approaches are comprised of four subdimensions, namely “(a) a technological approach, which focuses on the whole set of technical requirements, devices, and software being used for online learning; (b) an economic approach, which looks into cost-benefit and financial results of online learning; (c) an educational approach, which values learning progress and the performance of online learners; and finally (d) a global approach, which aims at striking a balance between the aforementioned approaches.” (p.91) and each context in the chapter is discussed also in terms of those sub-dimensions. In each context, various studies conducted in the literature are compiled and presented.

In the tenth chapter, *Developing Global Digital Citizens - A Professional Development Model*, Chih-Hsiung Tu and Marina Stock McIsaac introduce “a model for online teaching and learning that can be used as a conceptual framework to identify strategies that would support educators to develop global digital citizens (GDCs)”, depending on the technologies of which influence we increasingly feel today (p. 102). The model is comprised of five dimensions, namely individual digital learner, social collaborator, cultural constructivist, community collaborator and global digital citizenship. The online learner completes each dimension, and thereafter proceeds to the next level and achieves the aimed global digital citizenship dimension as a final dimension. Tu and McIsaac explain what each dimension covers, and what an educator can do in order to take learner to such dimensions. They also handle six different processes (personalizing, networking, creating, sharing, mobilizing, and managing) that both facilitate learner to proceed to the next level and make the influence on the learning processes in each dimension. And also, they give useful recommendations to the educators concerning each learning process. Besides, three catalyst tools are mentioned where learners from different cultures take place and that accelerate digital sociocultural teaching and learning: digital devices, digital communication applications and digital management practices. Examples on the purpose of each tool to be used for learners were discussed.

In eleventh chapter, *Leadership Challenges in Transcultural Online Education*, Michael F. Beaudoin touches upon the cultural challenges between individuals or institutions having different sociocultural contexts, depending on institutional partnerships and student and lecturer exchange in online learning, and the points required to be considered in order to ensure a more efficient leadership within these conditions. Moreover, at the end of the chapter, some useful guidelines are provided for individuals and institutions in transnational online education.

In the twelfth chapter, *Gender Issues in Online Learning*, as mentioned in previous chapters (second and fourth chapters), Colin Latchem examines to the gender issue in online learning. He compiles and presents the findings of various studies conducted on gender in the field of online learning to the reader in a comparative manner. Different
issues such as barriers, opportunities, equalities/inequalities, current status, access to internet, needs, priorities and circumstances observed in online learning and teaching are dealt and discussed in terms of gender. In line with all those information, useful recommendations are provided to the readers at the end of the chapter in order to ensure gender equality and flexibility in the online learning environment.

In the thirteenth chapter, *Transformative Learning Through Cultural Exchanges in Online Foreign Language Teaching*, Barrett discusses social dynamics in multi-cultural learning-teaching environment, where American teachers and Taiwanese teaching assistants teach English to Chinese and Taiwanese students as a foreign language, using computer-mediated communication (CMC), in order to improve language skills, by means of simultaneous Voice over Internet Protocol (VoIP). She states that the transformational learning in an intercultural online community is the major theme besides handling the language learning, intercultural competency, and perspective transformation associated with transformational learning. Based on the findings obtained from a grounded theory study, practical recommendations are given to the instructors, learners and support staff in an online EFL (English as a Foreign Language) teaching includes cultural diversity.

In fourteenth chapter, *International Interpretations of Icons and Images Used in North American Academic Websites*, some information are given about a study conducted by Knight, Gunawardena, Barbera, and Aydin on how the participants from four different cultures, genders, age groups and education levels understand and interpret the icons and images used on North American academic websites, and that aims to determine the factors having influence on such interpretations. Thereby, significant inferences were obtained concerning the perceptions, sociocultural contexts and perspectives of online learners on the interface design that is a significant factor of instructional design. In line with the findings obtained, some important recommendations are made to the designers for adaptation of culturally appropriate visual elements.

In fifteenth chapter, *An Analysis of Culture-Focused Articles in Open, Distance, and Online Education Journals*, Al-Harthi examines, using content analysis, the studies focusing on cultural issues that were published between 2001-2011 in three magazines prominent in the fields of open and distance education and e-learning. She classifies the findings she obtained, by the research type, authors’ gender and work-country affiliation. She also examines the culture-based studies in terms of research type and method of culture studies and lists them in four different categories: cultural types, cultural components, cultural impact and cultural approaches. Alongside the topics becoming prominent under each category, there are also recommendations at the end of the chapter for future researches. It can be suggested that the study conducted is substantially useful in order to be informed about the status of cultural studies and to provide a guideline for the further studies.

In sixteenth chapter, *Many Faces of Confucian Culture - Asian Learners’ Perceptions of Quality Distance Education*, a comparative study is presented, that was conducted by Chen, Shen, Fukuda, and Jung in order to determine the quality perceptions for distance education of learners from three Asian countries, namely China, Japan and Korea. Even though "to many Westerners, China, Japan, and Korea may appear to have much in common, as they have inherited Confucianism" (p. 184), the findings of the study reveal that there is a difference among the quality perceptions of learners for distance education, depending on the sociocultural differences. Alongside the dimension differences of the quality assessment perception of learners from China, Japan and Korea for distance education, it was stated there are also similarities of some dimensions such as “course development,” “information and publicity,” and “faculty support”. Furthermore, the reasons concerning sociocultural differences and similarities obtained are discussed in detail in this chapter and useful recommendations are given to the distance educators and researchers. Given that this chapter provides findings on different sociocultural values and the quality perception for distance education concerning those
three countries not but what it contributes in general to the literature, it can be asserted that it is a useful study.

In seventeenth chapter, *Looking Ahead - A Cultural Approach to Research and Practice in Online Learning*, Jung and Gunawardena reconsider the cultural approaches contained in the book, assess them from different aspects, and compile and summarize the important information contained in the chapters by providing individuals or educators who will make researches on culture with a holistic approach. They discuss key issues that will ensure a better understanding of cultural approaches concerning online learning applications and contexts, under topics of research types, gathering and interpreting data, design, guidance and support, and provide readers with seven significant key messages concerning culture.

As a conclusion, it can be denoted that the book deals with many themes and concepts concerning culture in online learning and teaching processes, within the contexts of researches, perspectives and assessments, and from this aspect is a useful resource that must be read brimming with important information and assessments that would guide both online educators, designers and researchers as well as the researchers working in the field of culture.

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