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Message from the Editors

Hello from TOJDEL

The Turkish Online Journal of Distance Education & E-learning AECT, Governors State University, Sakarya University, Ohio University and other international universities will organize International Distance education Conference (IDEC-2015) in September, 2015 in Saint Peterburg, Rusia (www.id-ec.net). IDEC series is an international educational activity for academics, teachers and educators. This conference is now a well-known distance education event. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities. Its focus is to create and disseminate knowledge about distance education and e-learning.

TOJDEL is interested in academic articles on the issues of distance education. The articles should talk about distance education. These articles will help researchers to increase the quality of both theory and practice in the field of distance education.

I am always honored to be the editor in chief of TOJDEL. Many persons gave their valuable contributions for this issue.

Call for Papers

TOJDEL invites article contributions. Submitted articles should be about all aspects of distance education and e-learning. The articles should also discuss the perspectives of students, teachers, school administrators and communities.

The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to TOJDEL.

For any suggestions and comments on the international online journal TOJDEL, please do not hesitate to fill out the comments & suggestion form.

January 01, 2015
Editor in Chief,
Prof. Dr. Aytekin İŞMAN
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Table Of Contents

Comparing E-tivities, e-Moderation and the Five Stage Model to the Community of Inquiry Model for Online Learning Design

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ABSTRACT

This paper explores the question as to whether learning design strategies of E-tivities, e-Moderation and the 5-Stage Model by Professor Gilly Salmon, might be practically aligned with the Community of Inquiry Model (CoI). This is relevant to explore as there is very little literature that firstly presents on the current research in to these 'Salmon Methodologies'. Nor is there any literature at all that marries these methods as a possible guide for catering to the complexities of Social Presence, Cognitive Presence and Teaching presence within the CoI model. This report will explore, analyse and compare these methods and their alignment to the three CoI presences. Also providing an argument for consideration of their use in CoI online learning design. Limitations in the research and application of both models are explored and recommendations for future research that would enable the appropriate testing of this idea are then finally presented.

Key Words: E-tivities, e-Moderation, 5-Sage Model, Communities of Inquiry, Social Presence, Teaching Presence, Cognitive Presence, Online Learning Design.

INTRODUCTION

Online learning continues to increase in momentum as an accessible method for participating in higher education, with many higher education institutions have been investing their resources into accommodating these new learners needs (Sun, Tsai, Finger, Chen, & Yeh, 2008). Currently in the United States "thirty-one percent of all higher education students now take at least one course online" (Allen, Seaman, & Sloan, 2011, p. 4); and in Australia, 19% of student in higher education students participated online and multi-modal courses in 2010 (Australian Bureau of Statistics, 2013). The issue however is that the student experience of online learning has continued to be one of high dissatisfaction with many facets of their learning journey (Bolliger & Martindale, 2004). Institutions are now in competition to attract and sustain learners to their organisations (Abdous & Yen, 2010; Roach & Lemasters, 2006; Ernst & Young, 2012), and there has been a rise in learners expectations of a positive online learning experience (Goodyear, Jones, Asensio, Hodgson, & Steeples, 2005; Paechter, Maier, & Macher, 2010). In conjunction with higher learning satisfaction being linked to continual enrolment/lower dropout rates (Allen, Burrell, Bourhis, & Timmerman, 2007; Park & Choi, 2009) and perceived course satisfaction found to predict e-learner self-regulation and sufficiency (Liaw & Haung, 2012), ensuring that learners are satisfied with their online learning experience has become more relevant to institutional success than ever. Student satisfaction research has been wide and varied and the key areas identified in the literature, have been most effectively summated by Bouhnik and Marcus (2006) as the four dimensions of: "(a) Interaction with the teacher; (b) Interaction with Content [includes course design]; (c) Interaction with Classmates; and (d) Interaction with the system" (p.301-303). As technical systems are often outside the online teachers influence, it is the first three categories that form the basis of reviewing successful learning online learning design.

One particular methodology that has grown exponentially over the past decade of research into solving these learner satisfaction issues of online learning, is the principles of constructivist learning design (Chitanana, 2012). Specifically on review of the literature, it is the constructivist approach of a Community of Inquiry (COI) framework (Garrison & Anderson, 2003), that theoretically appears addresses theses first three issues of student satisfaction in online learning design. The COI framework emphasis the role of three key elements to creating a sustainable and effective online learning experience. These areas are Social Presence, Teaching Presence and Cognitive Presence. Social presence is suggest to occur when participants are "identifying with the community, communicating purposefully in a trusting environment, and developing interpersonal relationships" (Garrison, Anderson, & Archer, 2010, p. 7). Teaching presence emphasis the role of the online teacher in creating a sustainable online community

and the facilitation of social and cognitive presence initiatives (Garrison, 2007). Indeed Teaching Presence is seen "as a significant determinant of student satisfaction, perceived learning, and sense of community" (Garrison & Arbaugh, 2007, p. 163). Lastly,

Cognitive Presence is described as "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse"(Garrison & Arbaugh, 2007, p.161). The issue for diligent and conscientious online educators, is how to navigate the complex and diverse world of designing and structuring their content in a way that suitable addresses these three categories of the COI framework. Indeed Garrison and Arbaugh (2007) reflected that future research needing to be done into CoI framework should include exploring practical learning design strategies for it. Such as "practical strategies and guidelines on how best to create social presence in an online environment" (p.168).

One particular 'practical' learning design approach that has a foundational of constructivist approaches, is the teaching and designing strategies first developed and coined by Professor Gilly Salmon of E-tivities (2002, 2013), e-Moderation (2003, 2011), The Five-Sage Model (2003, 2011, 2013), and more recently Carpe Diem professional development workshops for designing for online learning (2013). These particular learning and teaching design approaches attempt to converge many constructivist theories of online learning design in to one overarching framework for creating online pedagogy appropriate design of collaborative interactive learning and teaching in online environments. Although there is some research into the outcomes of applying these particular designing strategies, there is no research reviewing the connection between e-Tivities (Salmon, 2013) as a practical application of designing for CoI frameworks (Garrison & Anderson, 2003). Further there is no research that links designing e-Tivities to match the integral CoI indicators of Social, Teaching and Cognitive Presence. This paper seeks to argue that e-Tivities, e-Moderation and the 5-Stage Model, do indeed overlap and align with CoI, and could be utilised more fully by educators seeking to align their teaching and design practices with CoI frameworks.

This report will firstly provide definitions of E-tivities, e-Moderation, 5-Stage Model, and The Community of Inquiry. It will then compare the original literature on the Community of Inquiry and the subsequent key framework components of Social, Teaching and Cognitive presence, to E-tivities, e-Moderation and the 5-Stage Model as appropriate learning design strategies for catering to the three CoI presences. It will then explore the current, though minimal, literature on these Salmon specific strategies that are independent of the original authors work, and reflect on possible connections or alignments to the CoI framework in the results of the research. It will then explore limitations in the research for these Salmon Specific methodologies, then provide conclusions and recommendations for future research in the field.

Method of selecting literature

The literature for this review was chosen principally in the following manner.

- **E-tivities, e-Moderation and 5-Stage Model**: As there is limited research into these topics (thus the reason for this current research) most literature that could be found was included. This included literature from the original author, and from other researchers who claimed to have specifically used Salmon methods only. This was deducted on the basis of their citations and their descriptions of their processes. However some literature was omitted if there were methodological concerns, ambiguities in the purity of their use of the Salmon Methods. Research that was older than 2000 was also omitted, and where possible the most recent research available was utilised.

- **CoI research (inclusive of Social, Cognitive and Teaching Presence):** As there is quite a substantial amount of literature that has investigated CoI in one manner or another, it was decided that this review would stick to the original authors and regular contributors research as much as possible. This was to ensure purer and more accurate comparison between the original intentions of both methods descriptions and outcomes. As the original authors and contributors to CoI research have been diligent in producing regular and scientifically valid research, selection of literature was able to be chosen on the basis of relevant content to this research topic. However care was still taken to select research that did not have generalisability or ambiguity concerns. Also again, research that was older than 2000 was also omitted, and where possible the most recent research available was utilised

Methods of literature searching was predominantly electronic, with some exceptions for hardcopy books etc. The data base system EBSCOhost was used with the 'select all' option to include the total 38 subtopics, each which had access to thousands of journals. Including the popular Academic Search Complete which includes 8,500 full-text periodicals and more than 7,300 peer-reviewed journals. From there specific date range, full text and peer-reviewed journals only were set as refined searching settings. Google Scholar was also utilised for seeking relevant research. A

number of search terms were used for finding results, obvious key terms included Online Learning, Distance Learning, Online Learning Design, e-Learning Design, e-Tivities, e-Moderation, 5-Stage Model, CoI, Community of Inquiry, and Social/Cognitive/Teaching Presence. Further terms were searched on the basis of their reoccurrence as synonymous to the above key terms in the literature. Author refined selection was also used to find relevant research from the main authors of the methods (eg. Gilly Salmon, Andy Garrison and so on). Citation searches in Google Scholar and EBSCOhost were also done on specific seminal papers or books from the original authors. This was to help hone in finding research on the topics that appeared to have utilised the methods in their research and remaining close to their original forms.

E-TIVITITES, E-MODERATION AND THE 5-STAGE MODEL: DEFINED

E-tivities are defined as "frameworks for enabling active and participative online learning by individuals and groups" (Salmon, 2013, p. 5), and are utilised in online learning in order to create a clear structured opportunity for learners to participate and interact collaboratively with the content, peers and the e-moderator. Utilised as a means of seeking and acquiring a deeper understanding and connection to the content of the learning. The foundations of e-tivities include constructivism, situated learning and social learning theories (Salmon, 2002, 2013), which are integral components in "well rehearsed, principles and pedagogies for learning" (Salmon, 2013, p. 1). E-tivities are utilised weekly and constantly through course modules, are recommended to be deployed in groups of a maximum of 25 people (Salmon, 2002), and have a very distinct structure in their design. Please see Salmon (2013) page 3 for an overview of the structure of an e-tivity.

E-Moderation (2003, 2011) is term used to describe a particular strategy of interaction between the online instructor and their students. According to Salmon (2003) the role of the e-moderator is described as "promoting human interaction and communication through the modelling, conveying and building of knowledge and skills" (p.4). E-moderating skills (Salmon, 2003, 2011) include the use of weaving (integrating online student responses and probing or questioning areas of further discussion- particularly in through the use of e-tivities), and summarising (a succinct summary of learners responses to the module topic discussions, that explores the deeper context of learners responses and knowledge acquisition). An e-moderator is expected to be sensitive to the online learner's experience and have high levels of emotional intelligence. Important in applying e-moderating is "self-awareness, interpersonal sensitivity and the ability to influence" (Salmon, 2011, p. 104). Therefore e-moderating is directly linked to creating quality, personal, and effective interactivity between the learner and the teacher as important components of constructivism principles. See Salmon, 2013, (p.184-185) for an overview of weaving and summarising strategies in e-Moderation.

The 5-Stage Model (Salmon, 2011) is a strategic approach to structuring course content and interaction, around the basis of a natural stage-by-stage progression the e-learner is likely to go through in online learning. The model provides the course designer a scaffold in which to organise course content and structure, with the integration of specific stage appropriate e-tivities, to meet the individual online pedagogy needs of the learner (Salmon, 2003, 2011). This links directly to providing a valid strategy for meeting learner satisfaction in Course Structure and Organisation factors (CSO). Figure 1 displays a direct image replication of the model and the information of the stages involved from Professor Salmons (2014) website.
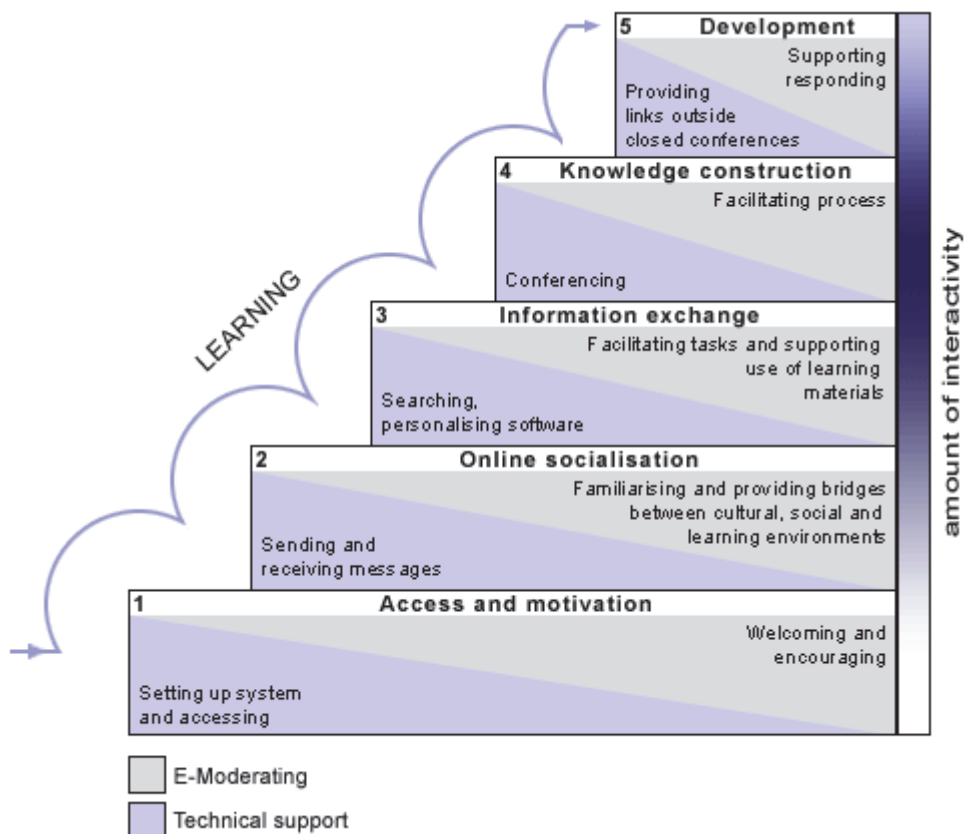
Figure 1: Salmon (2011) Five Stage Model (Gilly Salmon, 2014, para 1)

COMMUNITY OF INQUIRY DEFINED

According to the Communities of Inquiry (CoI; 2014) website, an educational CoI may be demonstrated as:

A group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding. The Community of Inquiry theoretical framework represents a process of creating a deep and meaningful (collaborative-constructivist) learning experience through the development of three interdependent elements - social, cognitive and teaching presence (Communities of Inquiry, 2014, para. 1-2)

Also defined as a process model of online learning, it emphasise the importance of developing a community of learners, who through collaboration and connectivity, are able to create sustain higher order processes of learning (Swan, Garrison, & Richard, 2009). It seeks not only to establish this integral online learning community of students, but to embed the pursuit of inquiry into online learning (Swan, Garrison, & Richard, 2009). In order to create this, the CoI frame work identifies three key overlapping areas that are integral components of learning design for applying the model. These key elements are known as Social Presence, Cognitive Presence and Teaching Presence (Garrison & Anderson, 2003). The visual depiction of the framework and these entwined key elements a depicted in the model, Figure 2 below.

Community of Inquiry

Figure 2. CoI Model. (Garrison, Anderson, & Archer, 2000; Model image retrieved from the Communities of Inquiry, 2014 website)

COMPARING SOCIAL, COGNITIVE AND TEACHING PRESENCE TO SALMON METHODOLOGIES.

SOCIAL PRESENCE

As it is understood that social presence encompasses the interactivity and meaningful correspondence between group member and course instructor in a trusting, collaborative and open online community (Garrison, 2007: Garrison, Cleveland-Innes, & Fung, 2004). Social presence in an online community can be divided in to three further aspects of "effective communication, open communication, and group cohesion" (Garrison, 2007, p.63). Research suggests that this type of social interaction is integral for successful online learning outcomes and that it is imperative they are imbedded within learning design (Irwin, & Berge, 2006; Watson, Gemin, & North American Council for Online, 2008). Some research has supported the necessity of social interaction with a sense of group belongingness reflecting better academic performance on coursework (Graff, 2006). Others provided results of barriers to student online learning, with a lack of social interaction indicated by students as the most important barrier (Muilenburg & Berge, 2005). Other student reflected data reported students beliefs that online socialisation was integral to their learning depth, sense of cohesion and emotional support (Holley, & Taylor, 2009). However, methods embedding social presences into online learning course design have not only been varied, but somewhat elusively described in the literature. There are still large gaps in providing clear and unambiguous clarity on how to design for this particular presence exactly (Garrison, 2007). Further limitations in Social Presence research seem to revolve around the issue that explorations tend to not measure the presences as a main variable as an achievement outcome, or its effect on other important learning variables (Biocca, Harms, & Burgoon, 2003). As well as a dominance in the literature to focus on social presence, without considering the overlap or importance of the simultaneous inclusion and effect of the other two presences (Garrison & Arbaugh, 2007).

Salmon (2013) stresses the importance of socialisation opportunities to be built in to e-tivities for successful online communication and group cohesiveness. Emphasizing that e-tivities need to support cultural, individual, and educational and personality sensitivity in order to enable participant's interpersonal engagement (Salmon, 2011). Indeed e-Tivities are expected to be designed catering specifically to the Five- Stage Model of student progression through an online environment, with stage two being the Socialisation stage. After students have progressed through the first stage, gaining access to the technology and being prompted by e-Tivities to explore their motivations towards the online course, the learning design is then set to move students through to the Socialisation stage of learning. E-tivities for this stage are meant to be designed so as to establish the online community and develop student networks and friendships similar principles of Wegner's (2006) communities of practice; joint enterprise, mutuality and shared repertoire. With these components reflected by designing e-tivities that teach the value of collaboration online and methods for doing so (Salmon, 2013). As well as opportunities to develop trust through safe self-disclosure and shared interested and ideas. Salmon (2013) again highlights the importance of the e-moderators role in enhancing the groups sense of cohesion and collaboration, thus supporting Garrison and Arbaugh's (2007) assertion to the importance in the overlap of the Presences.

Socialisation opportunities are built in to e-Tivities for successful online communication through the design component of the 'interact/respond' section (Please see Salmon , 2013, page 3). Whereby participants are required (through the e-Tivity instruction) to engage with other participants post responses to activities in order to allow for more meaningful connectivity between participants. Research supports that e-Tivities have the potential to develop this social element of online instruction as seen in the previously mentioned Pavey and Garland's, (2004) research that utilised e-tivities specifically to enhance student interaction and learning. It was noted that "successful bonding required encouragement and well-planned activities to foster student communication" (p. 313). This study reported that students did indeed engage with e-tivities to create social discourse and overall positive feedback for their implementation to socialisation and their learning outcomes was received (Pavey, & Garland, 2004). In other research (Morley, 2012) study that utilised e-tivities for enhancing practical socialisation, results revealed that students evaluated e-tivities as having assisted them with 'in-group' socialisation which contributed to their learning engagement.

Garrison and Arbaugh (2007) however have emphasised that the purpose of developing social presence should not reside solely for creating social support networks, interaction and effective communication. But rather its purpose in education "is to create the conditions for inquiry and quality interaction (reflective and threaded discussions) in order to collaboratively achieve worthwhile educational goals" (p.64). Which reflects the Cognitive Presence element of the model, and emphasises again on the overlap and fluidity of the presences. While Salmons 5-Stage Model does emphasise a full stage for the development of Socialisation, it does not believe that the social processes end there. Rather that they form the foundations for more in-depth cognitive processes to occur, through collaborative inquiry to be designed in e-Tivity structure, at the next two stages of the model. Which will be explored further in the next analysis of Cognitive Presence.

COGNITIVE PRESENCE

Cognitive presence is defined as "the exploration, construction, resolution and confirmation of understanding through collaboration and reflection in a community of inquiry" (Garrison, 2007, p. 65). Cognitive presence has been described as rooted with in Dewey's (1993, as cited in Garrison & Arbaugh, 2007) assertion regarding practical inquiry and the importance of critical thinking. Cognitive presence can be operationalised through a process of four phases of learning, as identified in Figure 3 below.
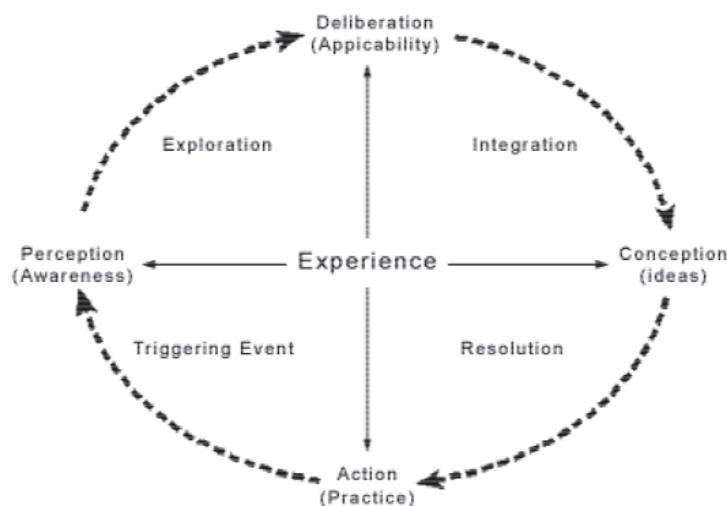
Figure 3. The Practical Inquiry Model (Garrison, Anderson, & Archer, 2001; Model image retrieved from the Communities of Inquiry, 2013 website).

The first phase of the Practical Inquiry model within CoI (Garrison & Anderson, 2003) is that of a 'triggering event' to create cognitive dissonance, whereby the students are faced usually with some form of learning challenge or issues to review. This can be likened to the 'Spark' element of the design of every e-Tivity, where by the learning designer/teacher using various online media, creates the ignition for the activity and discussion of the learning event. This could be a controversial/inspiring video, photo, or article that relates directly to the learning outcome of the task. The purpose of this spark is an "opportunity to expose 'content' but with the purpose of a spark to start a dialogue with others" (Salmon, 2013, p.3).

The second phase of 'exploration' "participant's shift between the private, reflective world of the individual and the social exploration of ideas. Early in this phase, students are required to perceive or grasp the nature of the problem, and then move to a fuller exploration of relevant information" (Garrison, et al., 2001, p. 10). This same phase reflects Salmon's (2013) third stage of Information Exchange whereby e-Tivities are to be designed concentrating on "discovering or exploring aspects of information that are known or reasonably easily retrieved by them. E-Tivites that encourage the presenting and linking of data, analysis and ideas in interesting ways online will stimulate productive information sharing" (p. 29). Both the Cognitive Presence phase of Exploration, and the Information Exchange stage of the 5-Stage Model emphasise the importance of an appropriately timed development process in critical thinking and the construction of knowledge. With an understanding that students must first be allowed to explore their own understand of a problem, and then seek knowledge and information both through the collective experience and personal reflection.

At the third phase of 'integration' in Cognitive Presence learning is more constructed and "decisions are made about integration of ideas and how order can be created parsimoniously" (Akyol & Garrison, 2011a, p.236). In other words there is a synthesis and focusing of their knowledge construction, application and understanding. However it has been reflected that this particular stage has been difficult to not only design for, but also to measure in terms of students achieving it (Akyol & Garrison, 2011a; Garrison, 2007; Garrison & Arbaugh, 2007). Garrison (2007) reflected on the research into this particular difficulty and acknowledge that it was integral that timing, appropriate content designing, and the role of the instructor to facilitate the group towards developmental discussion opportunities, were likely to be key to moving students through this phase. Salmon's forth stage of Knowledge Construction correlates directly with the requirements of integration, however does operationalise an approach to designing for students to demonstrate their achievement of the integration phase, through the use of appropriate e-Tivites and the role of the e-Moderator. Salmon (2013) advices that e-Tivites at this stage are to be designed to build knowledge without clear answers, create sequenced e-tivites that are strategic or problem based. Recommending that discussion based activities work well here as long as objectives are clearly focused but still allow for multiple perspectives. Salmon provides an e-Tivity exemplar to demonstrate a way to design for this particular stage (See Salmon, 2013, p.142-143). The role of the e-moderator also here is integral through 'weaving' and 'summarising' (See Salmon, 2013, p.184-185, for key explanations of what the process of weaving and summarising entails) in order to provide participants opportunities critically reflect and provide evidence of their learning. Research (Darabi, Arrastia, Nelson, Cornille, & Liang, 2011) also supports this particular style of scaffolded online facilitation (or moderation), whereby moderators were to "raise questions focusing on advancing the discussion towards a consensus among the group members on recommending an intervention asked" (p. 220). With results revealing that this scaffolded moderating approach was "strongly associated with all of the phases of cognitive presence" (Darbi et al., 2011, p.223).

Finally the last stage of Cognitive presence is the Resolution phase whereby students now are able to apply their learning from the previous phases within a meaningful context, through processes of testing and reflection (Akyol & Garrison, 2011a). The process of which could be demonstrated by finding solutions, evaluation, or providing examples of cognitive processes to reach their decisions or understanding (Garrison, et al., 2001). Salmon's (2013) final stage in the 5-Stage Model, 'Development' reflects the same outcomes as the resolution phase. With emphasis on this stage producing evidence of metacognitive processes as students demonstrate cumulative knowledge to new situations, self-reflection and critical evaluation. With explicated instructions for designing e-tivities at this stage that ask students to demonstrate this though encouraging them "to explorer their metcognitive awareness of positions they adopt-for example, 'How did you arrive at that position?' or 'Which is better and why?' (Salmon, 2013, p. 34). With research supporting that if the design or facilitator did specifically focus their questions on encouraging students to produce practical applications of their knowledge, then students/discussions would proceed into this resolution phase of Cognitive presence (Darbi et al., 2011). Limitations of the research into Cognitive Presence has focused on analysis of discussion forums and other web communicative content, in which the clarity of student progression through the four cognitive presence phases is reliant on the activity design and the role of the facilitator (Akyol & Garrison, 2011b). Overall Cognitive presence represents higher order thinking and is seen as one of the hardest areas to design for and measure (Garrison, 2007; Garrison et al., 2010; Akyol & Garrison, 2011a).

TEACHER PRESENCE

Teaching presence is defined as the "design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educational worthwhile learning outcomes" (Community of Inquiry, 2013, para 1.). Teaching presence reflects the online facilitators ability to help establish a trusting online environment, where by the facilitation of learning is goes beyond a transactional experience, but encompasses the 'coaching' of knowledge acquisition and group cohesiveness through shared meaning (Garrison et al., 2001). Much of the research into Teaching Presence and the CoI over the last 10 years or so has emphasised the growing awareness of just how important this presence is (Garrison, et al., 2010), and it "might be thought of as the glue which holds together the

CoI"(Redmond, 2011, p. 43). However the complexities of facilitating a collaborative and cohesive student cohort in the online environment, as well as training traditional teachers in this method is something that research has debated widely since the introduction of online learning (Macdonald & Poniatowska, 2011; Salmon, 2011). As reiterated by Anderson, Rourke, Garrison, & Archer (2001) "for learning to occur in this lean medium of communication, dependent on written language only, a strong element of what we refer to as teaching presence is required" (p.3). But with many online teachers having very little experience to teaching in this medium, let alone what it means to be a student in one (McQuiggan, 2012), a substantial framework or method for achieving this presence is integral to online learning success. Limitations into Teaching Presence research includes issues with debate with regards to the validation of the three subsections included in Teaching Presence (Design, Facilitation and Direction) and how to adequately define or measures the constructs (Garrison, 2007; Garrison et al, 2010). Other general limitations include the issue that much of the research to date tends to explore the three presences as a standalone investigation to another variable (Garrison & Arbaugh, 2007). As opposed to ensuring that all presences are adequately designed for and measured in research and learning design, given that the original CoI framework states that success in a CoI framework is the result of the interwoven experiences and co-aligned development of the strategies working together, not as separate entities (Garrison et al., 2000; Garrison et al., 2010).

Garrison et al., (2001) highlighted that elements of successful teaching presence include the "regulation of the amount of content covered, use of an effective moderation style in discussions, determining group size, understanding and capitalizing on the medium of communication" (p. 96-97). Anderson et al., (2001) explain Teacher presence through the three components of design (before and during the course), facilitation (encouraging discourse and knowledge construction) and direction (providing direct instruction for key course milestones). It is of note that these overlap and aligned with six categories in competencies for online teaching and e-moderators as identified by Goodyear, Salmon, Spector, Steeples & Tickner (2001). The following table gives a representation of these six Goodyear et al., (2001) areas with the researchers summations in relation to Anderson et al., (2001) Teaching Presence indicators.

Table 2.Online Teaching Competencies Compared with Teaching Presence Indicators.

Online Teacher/e-Moderation competencies	Alignment to three Teacher Presence key indicators
Process facilitator: facilitating the range of online activities that are supportive of student learning.	Facilitation and Design
Adviser/counsellor: working on an individual/private basis, offering advice or counselling learners to help them get the most out of their engagement in a course.	Facilitation
Assessor: concerned with providing grades, feedback, validation of learners' work, etc.	Direction
Researcher : concerned with engagement in production of new knowledge of relevance to the content areas being taught	Design
Content facilitator: concerned directly with facilitating the learners' growing understanding of course content.	Facilitation and Direction
Technologist: concerned with making or helping make technological choices that improve the environment available to learners.	Design and Direction

Salmon (2011) went on to further define these strategies and competencies for e-moderators which related to their "a) understanding of online processes, b) technical skills, c) Online communication skills, d) Content expertise (and) e) personal characteristics "(p.106-107). This comprehensive description can be reviewed in more detail in Salmon (2011), p. 106-107. Research supports that effective Teacher Presence (in conjunction with social and cognitive) has an effect on students perceived learning and course satisfaction (Akyol, & Garrison, 2008). With further

research into Salmon's e-Moderation technique specifically also revealing that e-moderators giving quality feedback, support and module management to ensured an effective online learning environment from the students perspective (Packham, Jones, Thomas, & Miller, 2006). As well e-moderation, in conjunction to the 5-Stage Model, created a cohesive and confident group environment for exploring learning through innovative technologies (Salmon, Nie, & Edirisingha, 2010).

REVIEWING THE PREVIOUS RESEARCH ON E-TIVITITES, E-MODERATION AND THE 5-STAGE MODEL

In a study by Pavey and Garland (2004), e- Tivities were utilised in a blended delivery, sports and exercise physiology module at the University of Durham in order to "stimulate depth of learning by encouraging students to engage more fully with the topics and issues" (p.305). As well as promote more interaction between students, instructors and the course content than have previously been experienced before the implementation of these strategies. The study attempted to utilise e-Tivities and the 5-Stage Model using a variety of platforms. While it did not follow the traditional structures of e-Tivities, which limits it its reliability as support for the learning design, it did utilise formative quizzes, discussion boards, interactive pages and virtual lectures to support learning through the 5-Stage Model. The course tutor and 95 of the 146 participants completed a multiple choice and short answer feedback survey and overall Pavey and Garland (2004) stated that "positive feedback emerged from the student's overall experience of participating in e-tivities to support their learning" (313). As well as positive online collaboration and interactivity observed between participants of e-tivities which could be linked to the development of possible Social Presence. However generalisability is limited to blended delivery mode only and to the use of e-Tivities and the 5-Stage Model, without the effects of e-Moderation as a facilitation strategy.

A further study by Headlam-Wells, Gosland and Craig (2005) involved e-mentoring for career development for women in management (Empathy-Edge), utilised e-Tivities and e-Moderation in order to structure their online e-mentoring web environment. While evaluations did not directly assess the success of the implementation of e-Tivities, nor was this a traditional academic environment, but rather a professional development one, positive student feedback and engagement was reported to help foster socialisation and authentic relationships between mentors and mentees (Hedlam-Wells et al., 2005). It could be considered that the role of a mentor is similar to that of a teacher, and that these outcomes could relate to Social Presence and Teacher Presence.

Morley (2012) investigated the use of wikis through an e-Tivity and e-Moderation structure, as a method for creating self directed and collaborative learning environments in a blended 1st year nursing course at Bournemouth University in the UK. Student evaluation of the experience revealed implementation of e-tivities helped them with their "learning demonstrations" (p.265). Content of the wikis also were evaluated and provided positive progression through the 5-Stage stage model helped create a cohesive and active group which lead to more positive evaluations. Evaluations did not extend to the whole course, nor to the use of these strategies, however there's an indication here of possibly Cognitive Presence and Social Presence effects of the analysis.

E-tivities and the 5-Stage model was used in a study was conducted by Bermejo (2005) over two years, on an engineering course for the School of Telecommunication Engineering of Barcelona, in order to meet integral learning outcomes set by the Accreditation Board for Engineering and Technology relating to higher order processing skill outcome expectations. Results of the study were the product of analysing student participation contributions and Student Evaluations regarding these knowledge skills (Bermejo, 2005). Results revealed that through these learning strategies, higher order skills processing and meaningful knowledge construction were prevalent both in the online environment, and the students assessment pieces. There is further possibility here that these outcomes, had they been measured, might have demonstrated the creation of Cognitive Presence. Other research that might also support Cognitive Presence comes from a private university in Malaysia of part time education students, reflected that the use of collaborative e-tivities was reported by students to aid in creating meaning and perusing deeper information construction (Sidhu, & Embi, 2010)

Kovacic, Bubas, and Zlatovic, (2008) investigated e-Tivities in the form of a wiki for English as a second language courses. They found that e-Tivities supported creative and deeper engagement with the content, an ability to reflect on personal interpretations and apply authentic learning strategies. Also it was noted that "most of the 23 analysed e-tivities with a wiki were positively evaluated by students of the ESP/EFL course" (Kovacic et al., 2008, p.1). As well as that e-tivities have "worked miracles and in many others changed the students learning experience" (p. 9). Again, although not a measurement variable, there is insight here into the potential of Social Presence initiatives emerging from this learning design.

In one of the few research available that utilised all three methods, Armellini, Jones and Salmon (2007) at the University of Leicester completed a 12 month study investigated the Carpe Diem process (a team based process in higher education for developing e-learning course design that utilises all three strategies of e-Moderating, e-Tivities and the 5-Stage Model) for learner centred e-learning course design and assessment in online learning through. However while their results reflected these strategise as being a valid method for creating learner centred course design and assessment strategies, the results of the teachers development of these strategies, and implementation in their online classes (successful or otherwise) was not a part of the measurement of results of the research design. Armellini and Aiyegbayo (2010) investigated the use of Carpe Diem process four British universities and three course disciplines, as a methodology to create "change and innovation in e-Learning design and assessment through e-tivities" (p. 933). This 12 month cognitive mapped study revealed that not only were Carpe Diem processes effective team based environments for creating innovation and change to online pedagogy, but also that the e-tivities created within this environment were successful in creating learner centred course design (Armellini & Aiyegbayo, 2010). However again, there was no follow on research into the implementation of these strategies by teachers, or the outcomes of the students they may have been applied to.

E-TIVITIES, E-MODERATION AND 5-STAGE MODEL RESEARCH LIMITATIONS

Firstly, there is very little research that clearly and identifiably utilising correctly designed or trained in Salmon specific e-Tivities, e-Moderation and the 5-Stage Model. Particularly all three methods within the one study. Also much of the research has limitations in providing effectual empirical data with its over reliance on qualitative methods, and follows the same issues in research design that much of the literature into online teaching strategies share (Oncu, & Cakir, 2011). It is also integral to note that not only is there little research into these strategies in general, but so far there is no research into the use of e-Tivities, e-Moderation and the 5-Stage Model (Salmon, 2003, 2011, 2013) that measure the success of these strategies specifically linked directly to the CoI. The links to the CoI presences provided in the e-Tivities, e-Moderation and 5-Stage literature above, is at best, deductive reasoning, rather than empirical evidence. Nor is there more importantly much research that directly explores how to effectively design for these strategies outside of the original authors work. More often these methods were used as part of a research design measure, other than student learning outcomes and factors, which in itself denotes a generalisability limitations.

Conclusions and Recommendations

Whether the industry likes it or not, teaching and learning as we have known it, is rapidly changing due to the trailblazing and transparent nature of online learning. E-learning is pushing teaching and learning design to evolve and reflect a more authentic and accurate representation of how we as humans, actually learn. What appears to be a 'new' era of knowledge delivery, actually reflects how humans have traded in knowledge for millions of years. Our individualistic educational culture is beginning to recognise the wisdom of collective principles in learning and knowledge. The days of the so called 'sage on the stage' are numbered as we make way for an organic and collective voice on what constitutes knowledge and skill acquisition. Constructivism (Dougiamas, 1998; Siemens, 2004) and its learner-centred principles of collective knowledge and personal meaning in learning, provided the seeds which gave rise to the roots of the future of learning design. Excellent gardeners Garrison et al., (2000) fertilized and tended to this 'new' learning tree and provided the guiding principles of Social, Cognitive and Teaching Presence that nurtured the sapling. No longer a sapling it widens its reach and strengthens the rings on its bark more and more every day. But what of the branches and shadow casting leaves that might be applicable to complete this potent life force? E-Tivities, e-Moderation and the 5-Stage Model appear very much to being in the same genus, with potential to blossom and cast their own seeds into the e-learning wind.

However in order for this knowledge delivery forest to blossom and give life and resources to a knowledge hungry world, many more ground keepers are needed. It stands to reason, based on previous research limitations that future research into CoI, needs to include more quantitative analysis methods. Future studies need to survey students directly, using a stable survey instrument such as Arbaugh et al., (2008), as seen in Shea and Bidjerano (2009). However this research assumes that the CoI methods have been adequately designed for in the online courses to begin with. Although it is clear, not just in this literature review, but in much of the dominating e-learning literature, that there is surmountable debate and confusion in to the 'how' of actually achieving this. As this literature review has pointed out, a viable 'how' is the use of Salmon specific methodologies (E-tivities, e-Moderation and the 5-Stage Model). Therefore future research should explore whether educators who use these strategies, are designing for the elements of CoI. Providing firstly evidence of CoI frameworks in design components of these methods, and secondly important insight and practical design advice for strategising to meet theses CoI frameworks. Lastly this would contribute to the limited body of research into these Salmon methodologies, providing much needed support and evidence for their increasing popularity in online learning design.

Furthermore, if online learning is more and more being accepted as the future of learning delivery for 21st century students, then it is imperative that ongoing investigating into many learning design methods continues in order to support student success. The key to the future of online learning, student, and institutional success, is for educators to simply never stop trying to provide quality and innovative delivery of knowledge. Continue to support the growth of new methods and approaches to learning design, rather than allowing online course delivery to stagnate due to lack of experience or interest. For in the end, not only does this rob students of the sustenance they require to succeed, but it also robs us all of a prosperous and resource plentiful harvest for the world we live in.

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Comparing Student Research Competencies in Online and Traditional Face-to-Face Learning Environments

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ABSTRACT

This research compares a completely asynchronous Master of Social Work (MSW) online research methods class with its traditional face-to-face counterpart using standardized measures of practice evaluation knowledge and research self-efficacy. Results indicate that students' knowledge and research self-efficacy improved between pretest and posttest, with no significant difference between online learners and traditional face-to-face students.

INTRODUCTION

Online learning/distance education continues to grow in popularity, and the field of social work is no exception. Despite skeptics criticizing online education in social work as not providing sufficient practice, engagement, and interaction time (Knowles, 2001), the number of online MSW degree granting programs continues to grow. As online learning/distance education instructional offerings expand, social work literature examining differences between online and traditional classroom teaching continues to develop. Previous research has explored different types of classes/teaching methods, with the majority of published articles detailing practice and research methods classes (Dennison, Gruber, & Vrbsky, 2010). The bulk of literature has developed around the idea of comparing web-based or online classes with traditional face-to-face courses (Dalton, 2001; Harrington, 1999; Hisle-Gorman & Zuravin, 2006; Kleinpeter & Potts, 2003; Royse, 2000; Seabury, 2005; Stocks & Freddolino, 2000; Westhuis, Ouellette, & Pfahler, 2006) but failed to use a design controlling for pretest scores (e.g. Harrington 1999; Hisle-Gorman & Zuravin, 2006; Kleinpeter & Potts, 2003), or use standardized measures of learning outcomes (e.g. Harrington, 1999; Royse, 2000; Westhuis, Ouellette, & Pfahler, 2006).

Previous social work literature specifically comparing online vs. traditional classroom experiences with research methods learning has examined differences in student satisfaction (Faul, Frey, & Barber, 2004; Ligon, Markward, & Yegidis, 1999; Westhuis, Ouellette, & Pfahler, 2006; York, 2008) showing mixed results ranging from higher overall satisfaction with web-assisted courses, to no difference in satisfaction levels by learning platforms, to higher satisfaction in the traditional face-to-face classroom. In previous literature, learning outcomes have been operationalized by course grades (Harrington, 1999; Hisle-Gorman & Zuravin, 2006; Kleinpeter & Potts, 2003) and/or exam scores (Westhuis, Ouellette, & Pfahler, 2006), but previous research has rarely used standardized measures to examine learning outcomes. Evaluating educational outcomes is the current focus of program assessment in social work education (Garcia & Floyd, 2002). Indeed, few studies comparing online with traditional face-to-face learning practices have used standardized measures with demonstrated reliability and validity, and those that have examined comfort with technology (Stocks & Freddolino, 2000), classroom environment (Stocks & Freddolino, 2000), and critical thinking skills in a policy class (Huff, 2000) rather than learning outcomes; it's time social work researchers heed the call for more rigorous study designs and measures in order to further the field (Dennison, Gruber, & Vrbsky, 2010).

Master of Social Work (MSW) students are required to successfully complete at least two research courses to receive their degree. Previous literature regarding social work research methods instruction has explored how to effectively teach statistics (Elliott, Eunhee, & Friedline, 2013; Wells, 2006), the importance of teaching and using evidence-based practice methods (Drake, Johnson-Reid, Hovrmand, & Zayas, 2007; Rosen, 2003; Rubin & Parrish, 2007), and using single-subject designs to evaluate practice (Wong & Vakharia, 2012). While these aspects of learning are critical to student success, it is important to examine student achievement of research competency using standardized measures and rigorous research designs across online and traditional face-to-face courses.

THE CURRENT STUDY

This study compares practice evaluation knowledge and research self-efficacy learning outcomes between a completely asynchronous online MSW research methods class and its traditional face-to-face classroom counterpart using a quasi-experimental non-equivalent comparison groups design. Using standardized measures of student's perception and confidence, as well as assessing student competency in "engaging in research-informed practice and practice-informed research" (CSWE, 2008, EP 2.1.6) this project builds on previous social work literature and adds to the ongoing online vs. traditional face-to-face classroom debate.

Program/Class Description

In fall 2012, California State University, Northridge introduced the first two-year, degree-granting, fully asynchronous online Master in Social Work (MSW) program in the United States. Building on a successful traditional face-to-face program, students in the online program and traditional face-to-face program follow a cohort model meaning that students enter and exit the program together and take classes in a prescribed order. Online students complete the program in two years. Traditional students have the option of completing the program in either two or three years. All students in the current study were part of a two-year cohort. Online students and traditional face-to-face students differ in that online students follow a quarter system; taking two eight week classes per quarter totaling four classes per semester. Traditional face-to-face students take four classes over 16 weeks each semester.

In order to graduate, all students must take and successfully complete three semesters of research methods: beginning research methods, advanced research methods, and a Capstone project. The current study utilizes only the beginning research methods course. The beginning research methods class focuses on problem formulation, operationalization, conceptualization, design, and measurement concepts, and students complete a single subject design over the course of the semester. Students in all cohorts receive the same content, and classes happen in the same semester for students in a two-year cohort, i.e. everyone has beginning research methods in their second semester, advanced research methods in their third semester and Capstone occurs in the semester before graduation.

METHODS

Sample

The study population includes adult MSW students enrolled in one of three master's level beginning research methods sections. Instructor B taught one section online (n=21). Instructor B and Instructor P each taught one traditional face-to-face section (n=13 for Instructor B; n=23 for Instructor P) for a total of 57 participants. Five students (1 from Instructor B's face-to-face class; 2 from Instructor B's online class; 2 from Instructor P's face-to-face class) did not complete the pretest; three different students (1 from Instructor B's online class; 2 from Instructor P's face-to-face class) did not complete the posttest for a valid N of 49 participants.

Design

This exploratory study used a non-equivalent comparison groups design with two groups: online instruction only and traditional face-to-face instruction, with pretest and posttest measures of student competency for both groups. Pretest and posttest scores were compared for all three sections. No significant differences were found between Instructor B's traditional face-to-face students and Instructor P's traditional face-to-face students, so those traditional face-to-face sections were combined and compared to the online student competencies.

Measurement

Two standardized measures were used to assess student achievement of research competency: the Practice Evaluation Knowledge Scale (PEKS) and the Research Self-Efficacy Scale (RSES). The PEKS was "developed to measure social work practitioners' beliefs about their knowledge of practice evaluation competencies" (Baker, Pollio, & Hudson, 2011, p. 558) and has demonstrated internal consistency (α=.925) and validity. The 8-item PEKS is measured on a scale from 1-5 where 1 = strongly disagree and 5 = strongly agree. Items include:

1. I have been adequately trained to conduct practice evaluation
2. I am comfortable with my knowledge of evaluation designs

3. If I had to design and evaluation plan I would know where to begin
4. I am able to identify an evaluation outcome
5. I am familiar with issues of reliability and validity
6. I am able to locate measures and scales to assist in evaluation
7. I am comfortable with data analysis techniques
8. The statistics I am required to keep are useful in evaluating outcomes

The RSES, developed by Holden et al. (1999) has demonstrated internal consistency reliability (α=.94), evidence of construct validity, and sufficient sensitivity "to detect change in students' research self-efficacy from the beginning to the end of their participation in a single-semester research course" (p. 472). The 9-item RSES is measured on a scale from 0 – 10 where 0 = cannot do at all, 5 = moderately certain can do, and 10 = certain can do. Items begin with the statement "how confident are you that you can…" and include:

1. do effective electronic searching of the scholarly literature?
2. use various technological advances effectively in carrying out research (e.g. the Internet)?
3. review a particular area of social science theory and research, and write a balanced and comprehensive literature review?
4. formulate a clear research question or testable hypothesis?
5. choose a research design that will answer a set of research questions and/or test a set of hypotheses about some aspect of practice?
6. design and implement the best sampling strategy possible for your study of some aspect of practice?
7. design and implement the best measurement approach possible for your study of some aspect of practice?
8. design and implement the best data analysis strategy possible for your study of some aspect of practice?
9. effectively present your study and its implications?

Data Collection

Combined, the PEKS and RSES total 17 questions. For the purpose of this study, each measure was collapsed into an easily readable online chart where respondents were asked to click the button next to their response for each question. In addition, during the pretest respondents were asked to provide their age, gender, ethnicity, and previous experience with research to comprise a 6-question survey with 21 total items.

After receiving approval from the California State University, Northridge Institutional Review Board, data were collected online via the class Moodle page. Students were directed to a link to the survey prior to the first class session via an email message from the *other* instructor. Students were assured that *their* instructor would not see their survey results until after the class ended, and then only in aggregate. Each student has a unique login, so matching pretest with posttest data occurred seamlessly. There were no duplicate entries, meaning it was unlikely that students logged in under another students' ID to complete either the pretest or posttest.

RESULTS

Results from paired samples t-tests indicate a statistically significant increase in PEKS scores from pretest (M = 18.20, SD = 5.34) to posttest (M = 29.12, SD = 4.53), t (48) = 12.48, $p < .001$ (two-tailed). The mean increase in PEKS scores was 10.91 with a 95% confidence interval ranging from 9.11 to 12.72. The eta squared statistic (.75) indicated a large effect size. Results indicate a statistically significant increase in RSES scores from pretest (M = 486.95, SD = 165.38) to posttest (M = 698.16, SD = 126.73), t (48) = 8.06, $p < .001$ (two-tailed). The mean increase in RSES scores was 211.24 with a 95% confidence interval ranging from 158.56 to 263.84. The eta squared statistic (.57) indicated a large effect size. There was a substantial difference in program evaluation knowledge (as measured by the PEKS) and research self-efficacy (as measured by the RSES) for both online and traditional face-to-face students after taking the foundation research methods class.

ONLINE Group

Wilcoxon Signed Rank Test (the non-parametric alternative to the paired samples t-test) was performed due to the small sample size (n=18). PEKS and RSES scores revealed a statistically significant increase in practice knowledge, z = -3.27, $p < .001$ and research self-efficacy, z = -3.52, $p < .001$, with large effect sizes (PEKS r = .53; RSES r = .57). Since results were the same for the Wilcoxon and the paired samples t-test, and because paired samples t-test results are inherently more understandable to the average research consumer, paired samples t-test results for the

online group are reported in Table 1.

Table 1. Online Student Responses by Item, Pretest, and Posttest

Item	PreTest (n=18)		Posttest (n=18)		*t*-score	Sig. Level	Effect Size
	M	*SD*	*M*	*SD*			
PEKS 1	1.89	.58	3.78	.64	-8.31	.000*	.80
PEKS 2	2.00	.68	3.56	.78	-6.33	.000*	.70
PEKS 3	2.11	.83	3.78	.80	-7.79	.000*	.78
PEKS 4	2.28	1.01	3.61	.69	-6.23	.000*	.69
PEKS 5	2.83	1.09	3.78	.80	-3.01	.007*	.35
PEKS 6	2.06	.72	3.67	.76	-6.98	.000*	.74
PEKS 7	2.11	.83	3.22	.80	-4.16	.001*	.50
PEKS 8	3.00	1.18	3.83	.70	-2.48	.024*	.27
RSES 1	72.22	24.86	90.56	10.55	-3.57	.002*	.43
RSES 2	78.33	24.31	92.22	10.60	-2.55	.020*	.28
RSES 3	60.00	22.75	77.78	18.96	-2.67	.016*	.30
RSES 4	58.89	24.22	80.00	16.80	-4.03	.001*	.49
RSES 5	50.00	23.01	75.56	18.22	-4.29	.000*	.52
RSES 6	47.22	24.92	72.78	16.01	-4.29	.000*	.52
RSES 7	46.67	23.51	73.89	16.85	-4.72	.000*	.57
RSES 8	45.00	25.49	72.22	18.64	-4.42	.000*	.53
RSES 9	56.11	23.04	82.22	16.64	-4.20	.001*	.51

Note.   PEKS = Practice Evaluation Knowledge Scale

RSES = Research Self-Efficacy Scale

p<.05

FACE-TO-FACE Group

Paired-samples t-tests were conducted to evaluate the impact of the class on students' scores on the PEKS and RSES surveys. There was a statistically significant increase in all items of the PEKS and RSES surveys between time 1 and time 2 for traditional face-to-face students (see Table 2).

Table 2. Face-to-Face Student Responses by Item, Pretest, and Posttest

Item	PreTest (n=31)		Posttest (n=31)		*t*-score	Sig. Level	Effect Size
	M	*SD*	*M*	*SD*			
PEKS 1	2.29	.94	3.68	.65	-6.74	.000*	.60
PEKS 2	1.94	.63	3.58	.77	-10.01	.000*	.77
PEKS 3	1.90	.75	3.52	.85	-9.08	.000*	.73
PEKS 4	2.26	.93	3.74	.82	-8.91	.000*	.72
PEKS 5	2.74	1.12	4.13	.56	-6.42	.000*	.58
PEKS 6	2.23	1.02	3.90	.75	-8.67	.000*	.71
PEKS 7	1.90	.65	3.06	.77	-6.44	.000*	.58
PEKS 8	2.90	1.13	3.45	.99	-2.02	.035*	.12
RSES 1	73.55	19.41	86.45	14.50	-3.92	.000*	.34
RSES 2	71.61	19.00	86.13	13.34	-4.43	.000*	.40
RSES 3	55.48	21.10	77.42	16.32	-5.76	.000*	.53
RSES 4	56.13	22.76	77.42	18.43	-4.14	.000*	.36
RSES 5	44.52	20.30	72.26	16.87	-7.06	.000*	.62
RSES 6	40.32	18.88	70.32	20.08	-6.70	.000*	.60
RSES 7	38.71	19.10	71.94	20.07	-6.64	.000*	.60
RSES 8	37.42	19.14	67.10	22.98	-5.78	.000*	.53

| RSES 9 | 53.23 | 27.98 | 78.06 | 19.40 | -5.08 | .000* | .46 |

Note.   PEKS = Practice Evaluation Knowledge Scale

   RSES = Research Self-Efficacy Scale

p<.05

COMPARING Online vs. Face-to-Face Learners

One-way between groups analysis of covariance (ANCOVA) was conducted to compare differences in learning platforms for research methods instruction for MSW students. The independent variable was the type of learning platform (online vs. traditional face-to-face classroom), and the dependent variable consisted of scores on the PEKS and RSES surveys administered at the end of the first research class. Participants' scores on the PEKS and RSES pretest surveys were used as the covariate in the analysis.

Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. After adjusting for pre-test scores, there was no significant difference between online and traditional face-to-face classroom students on posttest PEKS scores $F(1, 46) = .01$, $p = .91$, partial eta squared = .00, and posttest RSES scores, $F(1, 46) = .36$, $p = .55$, partial eta squared = .01. There was no relationship between the pretest and posttest scores on the PEKS and RSES surveys, as indicated by partial eta squared values of .04 and .05 respectively.

DISCUSSION

The CSUN MSW program implemented the first two-year, completely asynchronous, online MSW program in the United States. The standards for the online program are the same as those for the traditional classroom, and the same distinguished faculty teaches in both programs. As such, and based on previous literature, the investigators expected to find no difference in learning outcomes between the online and traditional face-to-face classroom students. Meta-analyses comparing distance education and classroom instruction reveal somewhat mixed results with support leaning toward distance education being similar to traditional classroom instruction. Allen, Mabry, Mattrey, Bourhis, Titsworth, and Burrell (2004) and Sitzman, Kraiger, Stewart and Wisher (2006) found no differences in educational effectiveness for distance learners whereas Bernard et al. (2004) found wide variability and low effect sizes on various outcomes. Creating subsets of synchronous and asynchronous applications resulted in effect sizes for asynchronous applications favoring distance education (Bernard, et al., 2004) and Sitzman et al (2006) found web-based instruction 6% more effective than classroom instruction for teaching declarative knowledge. The current study examined an asynchronous, web-based distance-learning classroom compared to a traditional face-to-face classroom for research methods (declarative knowledge), finding no differences in the learning outcomes between the two learning platforms, thereby providing additional evidence in support of the effectiveness of distance education. Finding differences in learning outcomes would have resulted in adjustments being made to either course, depending on the nature and direction of those differences.

Despite a growing body of evidence that online learning or distance education is just as effective as traditional face-to-face classroom instruction, the various types of online education make comparisons difficult. Online learning or distance education ranges from in-service training on-demand via television and satellite to PC systems (Williams, Nichols, & Gunter, 2005) to asynchronous electronic software content (Harrington, 1999) to hybrid models combining face-to-face instruction with distance learning applications (Ayala, 2009; Osguthorpe & Graham, 2003). The current study adds to the developing body of literature by using standardized measures of learning outcomes, a pre/post quasi-experimental design, and controlling for instructor and content differences in that the same instructor taught both the asynchronous online and face-to-face classes.

As online learning and distance education continues to develop, the CSUN MSW program is on the cutting edge of this growth in the social work field. Remaining on the cutting edge involves conducting research that goes beyond student satisfaction or course evaluations. Our results indicate that students gain confidence in research methods and evaluation regardless of the learning platform utilized. Increased student self-efficacy in research methods may translate into greater comfort recognizing and employing evidence-based practices in the field, but results should be interpreted with caution considering the study used self-reports of a nonrandom, convenience sample of graduate social work students from a single university. Although there were no statistically significant differences between the face-to-face and online students at pretest, participants were not randomized into experimental and control groups and it is

possible that there are inherent differences between the two groups that account for the knowledge and self-efficacy gained. Selection bias remains a threat to internal validity with this non-randomized design.

Despite the limitations of the current study, our results add to the growing body of literature showing that successful student education may occur through a variety of learning platforms. A major strength of this study is the use of pre/post standardized learning outcome measures for two groups of students: online and traditional face-to-face learners, with findings suggesting that the modality of content delivery is less important than the content itself.

Future research should explore long-term retention of knowledge (e.g. Baker et al, 2011). Since the timing of content delivery in this sample differed by seven weeks (15 week semester for face-to-face students; 8 week course for online students), it is possible that the shorter learning time could negatively affect long-term retention of knowledge. Furthermore, research about the quality of programs from the perspective of learning outcomes triangulated with faculty-measured student competency could provide useful knowledge for informed practice and policy. Implications for social work education include effectively utilizing a broad range of information and communication technologies and increasing accessibility to social work students in traditionally underserved areas.

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ELECTRONIC EDUCATION (E- education) AND ITS EFFECT IN DISTANCE LEARNING PROGRAMMES IN NIGERIA

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ABSTRACT

This paper examined the relevance of electronic education, its effects on effective actualization of distance learning programmes in Nigeria by defining the concept of electronic education in improving standard of the learning process. It also discussed the problems of this form of education. An, overview of the National Policy on Education (NPE) on electronic education and its initiates in Nigeria educational system was discussed. Also, it elaborated on the importance of virtual library and ICT in effective distance education programmes and concluded by suggesting the way forward in improving electronic education system for advancement of distance education in Nigeria.

Key words:E-education, Distance learning, Information and Communication Technology, National Policy on Education, Virtual library.

INTRODUCTION

Realizing the potential of education as an instrument for modernisation of their economy, African countries invested heavily in expanding their educational systems after achieving political independence. Distance education lends itself to technological and scientific advancements and meets the diverse human and social needs. It incorporates into its basic correspondence teaching methods, educational broadcasting, audio-visual aids, and recently telecommunication and computer based technologies. Information and Communication Technologies (ICT) have become key tools and had a revolutionary impact in our country and the world, as well as on how we live.

This observable fact has given birth to the contemporary e-commerce, e-government e-medicine, e-education and etc. Technology is having a revolutionary impact on the educational process globally. Ikemenjima,(2005) stated that, this revolution is not widely spread and needs to be strengthened to reach a large percentage of the population. The Universal Basic Education if meaningfully implemented is expected to care for the failure of Nigerian education programmes and the use of appropriate technology in educational process. Stakeholders must insist on the best standards and approaches to ensure effective technologies for education service delivery in the processes of impacting knowledge and skill.

New technologies and techniques engendered by information and communication revolution now allow for producing and saucing of knowledge and impacting of skills. The new technologies allow educational instructors to move into the role of guiding and assisting students to gain the skill required to acquire and utilise knowledge available in various forms all over the world. The positive impact of technology, when carefully selected and adequately utilized on process of acquiring knowledge and skill has been established. Onyelemezi (1988) is of the view that instructional materials otherwise known as educational technology help the teacher convey the intended message effectively and meaningfully to the learners so that the learner receive, retain and apply the experiences gain to reach overall educational goal. Okwo, (1995)explain that, the utilization of electronic instructional material by teachers arouse student's interest curiosity motivation, imagination and stimulation as well as enhance retention of what is learnt.This is aimed at promoting student's knowledge and skills.

THE CONCEPT OF E-EDUCATION

E-education is electronic mode of knowledge and skill transmission, this does not necessarily involve physical contact between teacher and student. The concept computerized teaching and learning have given birth to computer-aided instruction(CIA). This process represents the combination of both knowledge and skill impartation. Access to electronic materials through the internet is flexible, ensures broad feasibility and accessibility of educational opportunities. Ikemenjima (2005) stated that the internet is an effective system of instruction, and learning materials can be accessed irrespective of time and space.

PROBLEM OF E-EDUCATION IN NIGERIA

Information and Communication Technology (ICT) plays a prominent role in supporting process of acquiring knowledge and skills as well as National development efforts in Nigeria. There are problems to the effectiveness and better implementation of e- education. Some of these problems as stated by Mac- Ikemenjima(2005) include:

1. Inadequate ICT infrastructure such as computer hardware and software and bandwidth/ access.

2. Lack of skilled manpower, to manage available systems and inadequate training facilities for ICT education at all educational level.

3. Resistance to change from traditional pedagogical methods to more innovative, technological based method of knowledge and skill acquisition , by both students and academics;

4. The educational system is underfunded, therefore, available funds are used to solve more urgent and important needs by the institutions putting aside the technological problems to lay low.

5. The over-dependence of educational institutions on government for 100percent funding has limited institutions ability to collaborate with the private sector or seek alternative funding sources for E-education initiative.

6. Ineffective co-ordination of all the various ICT for education initiatives.

The above listed is not wide-ranging but represents the major problems facing e-education in Nigeria. If the above discussed problems are being addressed, there are chances that E-education will thrive in Nigeria and improve dramatically. We also believe that this will have larger, much desired impacts on development and modernization of Nigeria as a society.

NATIONAL POLICY ON EDUCATION AND OVERVIEW ON E- EDUCATION

The section on Educational service in the National Policy on Education in Nigeria represents Educational Technology (1981). This means that it cannot be said that there is no place for ICT in Nigeria's Educational Policy. Educational technology can be viewed among other things as an extension of Educational process which is an instrument for e-education. The Nigerian educational sector is guided by the National Policy on Education and several coordinating mechanisms have been put in place to enforce and ensure that the highest standards are maintained in curriculum, infrastructure and skilled manpower requirements.

The primary and secondary schools are directly under the ministry of education either at the state or federal level, the universities are under the National Universities Commission (NUC), the polytechnics are under the National Board for VocationalColleges and Technical Education (NABTECH), and the National Commissionfor Colleges of Education (NCCE) oversees the activities of the Colleges of Education. The institutions under each of these coordinating mechanisms are enormous and diverse in many respects.

DISTANCE LEARNING IN NIGERIA

The National Policy on Education is overt in referring to what is now known as Open and Distance Learning (ODL), and emphasized education for all and lifelong learning. It stated that most instruction of change in any society is education. Willis (1983) described distance education as the learning process that takes place when a teacher and students are separated by physical distance and technology is used to bridge the instructional gap. Distance learning did not just started in Nigeria, it has been in existence since 1940s as correspondent studies. When Nigerians got enrolled in correspondence colleges in Great Britain, the main mode of instructional delivery was printed materials. Distance learning variously known as "correspondent study, home study, off campus study and etc," is the provision of education by a mode other than the conventional face to face method.

Federal Ministry of Education (2002) described distance learning as "any form of learning in which the provider enables individual learner to exercise choice over any one or more of a number of aspects of learning". Also it could be "an educational process in which a significant proportion of the teaching is conducted by someone in space and in time of the learner". In this type of system there is freedom from restriction and rigidity which usually characterise the conventional system o learning. The distance learning provides opportunity for student to be responsible for the pace and completion of their study, the lecturer does not need to be present in class always. He makes contact with learners through a variety of communication medias.

DISTANCE LEARNING AND EDUCATIONAL DEVELOPMENT IN NIGERIA

Education and training have to be a life-long process, if they are to be effective and remain aware of current theories and practice of individual field of specialization. The emergence of distance learning in Nigeria is to help in improving the skills, values, attitudes, knowledge, that are relevant for the development of citizen of the nation. The development of interactive computer mediated communication systems in particular, provides education institution with a means of

both delivering education to individuals when and where they want it, and being receptive to students view and queries. Distance learning must be seen as part of national struggle for security, national development, social justice, literacy, and economic prosperity.

Bishop (1986) stated some advantage of distances learning the roles it plays in any society.

- Distances learning is probably the most economic method of education. No extra buildings have to be provided, the students can however stay at home and study.

- Distances learning is a flexible type of education, the student studies in their own time, pace and whenever they choose. Students are not removed from the social and economic status in the country.

- Distance learning can help assuage shortages shrivel of trained personnel or facilities.

- Distance learning can operate over large areas and long distance. This would actually help in a country like Nigeria. It would cater for widely scattered and dispersed population.

Jegede, (2001) opined that the ever-continuing growth in Nigeria's population, the attendant escalating demand for education at all levels, the difficulty of resourcing education through the traditional means of face-to-face classroom self mode, and the compelling need provide education for all, irrespective of environmental social or cultural circumstances, have meant that the country must of necessity find the appropriate and cost-effective means to respond adequately to the huge investment to the demand for education.

PROBLEM OF DISTANCE LEARNING CENTRE IN NIGERIA.

Distance learning programme in Nigeria has been in operation for a long time. However, its centers have problems which constitute barrier to its thriving. Some of these problems are discussed below;

Inadequate facilities: Many of the institutions that run distance learning programmes are designed as single mode institutions to offer courses mainly through face- to-face contact. The institutions were struggling to have sufficient facilities for their regular programmes. This, make it difficult for them to procure necessary equipment for other programmes, the available facilities for teaching and learning processes would be over utilized.

Lack of qualified Personnel: In these centers, there are no educational technology instructors or insufficient number of such. Many of the available lecturers does not have a proper understanding of distance learning methodology. Their understanding is more on the conventional ways of teaching and learning. Also educational administrators with special skills in distance learning are not available.

Inadequate power supply: The applying of electronic gadgets in the transmission of knowledge is indispensable in distance learning. In areas where there is erratic power supply, it is difficult if not impossible to make use of knowledge transmission equipment. Many of the centers did not have a regular supply of electricity. This make them resorted to face-to-face teaching and the use of course materials.

Improper curriculum: Many of the programmes mounted at the learning centers were not focused on national needs. The ultimate goal of the management of centers is to make money. They admitted any student for any course, and they gave more attention for arts based courses than the science and technology.

Attitude of instructors and lecturers: Bad behavior such as forceful sales of handouts, sexual harassment, poor class attendance and poor handling of students' assignments are common among instructors and lecturers at the study centers (Jayeola-Omoyeni 2002). This attitude is a counter-productive as students might be interest in the programme but the certificate.

Improper administration: Poor monitoring of the programme, poor motivation of instructor/lectures and poor supply of course materials on the part of the administrators could lead to failure of the programme. in the study centers, teachers and programme coordinators have not been very much sincere in the evaluation of student' performances.

THE NATIONALL OPEN UNIVERSITY OF NIGERIA (NOUN) DISTANCE LEARNING INSTITUTION WITH E-EDUCATION FACILITIES

The idea of an open university in Nigeria has been with the Nigerian Universities Commission since 1976, although it was only two years later, at the height of the new political development in Nigeria, that the idea gained prominence, almost to the point of being an electoral promise. However, it was not until 1st May 1980 that a planning Committee on the Open University was set up by the then newly elected civilian administration. The chairman of the presidential Committee on the Open University in Nigeria, Professor G.J.AfolabiOjo, who also became the first Vice- Chancellor of the institution, (Adamu, 1994).

The nature of the proposed Open University in the context of Nigerian higher education, the administrative and

academic structure of the University, the technical support services, staff establishments, relationships with other universities and related bodies within and outsides the country, and also relationships with the mass media, (Ojo, 1982). "The objectives of the Open University are rationally flexible and responsive programmes which will be run at degree and post-graduate levels as well as for diploma, certificate.Enrichment and refresher courses to meet the needs of university students who will include working adults willing to combine work with learning, housewives, handicapped persons, and also young men and women who must have minimum qualifications for admissions as determined by the senate of the University. The teaching methods of the University are also clearly stated by Ojo, " the University have used the following teaching methods, at various levels, depending on the available technology and energy: (a) correspondence material (b) radio and television (c) sound and video tapes suitable for use in transistorized equipment (d) face-to- face teaching at local study centers and (e) written assignment."

In view of the extensive array of teaching techniques to be used, the Open University plans have been made to ensure that it dependence on some technical support services is reasonable, feasible and reliable. Such essential support services include printing, radio, television, post and telegraphs, web-based modules and computer facilities. It runs programmes in education, arts and humanities, business, human resource management and science and technology.

THE POTENTIAL VALUES OF VIRTUAL LIBRARY IN E-EDUCATION DEVELOPMENT.

The general role of the library include promotion of education at all level, then the virtual libraries are essential partners in this asset because they complement and facilitate access to fast educational and other information need of the people. Libraries and library users would benefit from accessing several databases, discussing groups and other resources online. The virtual library with the potentials and capacity for massive data exchange, the internet has become an enhancement tool for distance and electronic learning. This is through the creation of virtual schools, classrooms, and laboratories. The virtual library is seen as a new opportunity created for the nation's Universities, and other enterprises develop and assist educational development existing both in the rural and urban communities of the country.

DISTANCE LEARNING IN RELATION TO E-EDUCATION

Distance learning also referred to as distance education has existed for a long time. This form of education obtains knowledge outside the traditional avenue of attendance at learning institution .Moore (1999)stated this concept as "all arrangement for providing instruction through print or electronic communication media to person engaged in planned learning in place of time different from that of the instruction(s)" From the beginning distance learning has grown to be the most popular and, widely accepted means of providing education to the public either to complement the traditional formal classroom teaching system or exist as an independent educational process with host of distinct and peculiar methodologies .

According to Holmberg, the term 'distance education' covers ''the various forms of study at all levels which are not under the continuous, immediate supervision of tutors present with their students at lecture rooms or on the same premises'' (Holmberg 1989, p. 3). But contiguous education and pure distance education are extremes that rarely exist. Many distance education providers use face-to-face tutorials, summer schools and laboratory sessions, whereas many conventional universities utilize independent study and guided learning by tutors and a variety of media. The advent of the new interactive communication technologies enables synchronous communication between students and teachers and in-between students from a distance.

Daniel's (1990) interpretation of the term 'distance education' embraces all forms of instruction in which classroom sessions are not the primary means of education. Distance education is mostly homework, with occasional work in class; whereas conventional education is mostly classwork with occasional work at home. In conventional education the teachers teach; in distance education the institution teaches.

Although ICT facilitate the provision of distance education, and are also defined by many as 'distance learning technologies' (Arnold 1999; Garrison 1999; Garrison and Anderson 2000; Peters 2001), 'distance' is not a defining characteristic of e-learning. The applications of electronic media in distance teaching settings constitute only partial and limited functions, out of their overall capabilities. By their very nature, the new technologies are much more complex than the old distance teaching media, and they open up possibilities to design new study environment that were not feasible beforehand for both on-campus and off-campus students. The new ICT offer a rich plethora of uses in learning/teaching processes far beyond the ability to transfer content of textbooks and lectures to students at a distance. In fact, none of the ICT uses denotes the physical separation of the learner from the teacher at any stage of the study process. Many of the ICT qualities can be used most efficiently to enrich and support lectures, seminar meetings and face-to-face tutorials.

Distance learning is said to have some models,they are classified into three categories,distributed classroom, independent learning,and open-learningclassroom

- Distributed classroom is said to be interaction telecommunications technology extend a classroom-based course

from one location to a group of students at different locations, the institution controls the pace and place of instruction.

- Independent learning as well is a type of model that free student from having to beat a location at specific time.The student are provided with a variety of instructional materials including course guide and outlines Instructors met with their student via technological equipment like internet, computer and electronic gadget.

- Open Learning Classroom; this involves the use of print course guide and other media to allow the individual student to study at his or her own pace ,combined with occasional use of interactive telecommunication technology from group meeting among all enrolled student.

INFORMATION AND COMMUNICATION TECHNOLOGY IN DISTANCE LEARNING

The use of Informationand Communication Technology in educational process especially distance learning cannot be over looked. It is the best and the easiest way of communication between the instructors and their individual students across distances. In distance education the use of technology is essential. It is not a supplement to the traditional forms of distance education: correspondence and telecommunications-based education. The history of distance education reaches back to the 18th century when it took the form of correspondence education first. It was supplemented later by telecommunications-based distance education, which relies on a synchronous form of delivery and interaction between tutors and students. But only after the early success of the British Open University a wave of foundations of distance teaching universities in Europe and the United States during the 1960s and 1970s provided real alternatives to traditional classroom-based higher education.New technologies are seen as a modern and an improvement on the early teaching and learning method. Recently education has witnessed rapid development like other profession in this day of Informationand Communication Technology (ICT).The incoporation of the computer and telecommunication technologies are dynamic force in distance education, providing a new and interactive means of overcoming time and distance to reach learners. Some of the instructional medias/ technologies used in Distance learning include; instructional television, computer, and interactive videoconferencing.

STRATEGIES FOR THE PROGRESS OF E-EDUCATION IN NIGERIA

It is generally accepted that computers and telecommunication technologies is a prominent factor in E-education process, organizational structure, quality services, work and etc. Thereforeeducational policy makers will need to work with other sectors to develop a multi-sectoral approach to development that will effectively improve the potential of ICT and promote more effectively processes which includes promotion of transparency and accountability. E-education has great potentials to achieve education for all by the year 2015 and therefore should be maximally harnessed by every possible avenue.

Mac-Ikemejima (2005) pointed out certain recommendations for the development of E-education in Nigeria. They are as follows;

- ❖ IT education should be included in the educational curriculum and the provision of necessary infrastructural support, massive training and employment of skilled manpower into both secondary and tertiary institutions. Professional software developers should be trained and supported with the necessary equipment to develop countrywide usable E-education software. Government education coordinators and agencies should work together in developing integrated broad-based strategies for E-education with a definitive timeline for its completion. Government should increase funding for the entire educational sector with emphasis on ICT and also encourage NGOs to participate in the funding of E-education projects.

- ❖ Government should work with other sectors to ensure affordable and sustainable access to ICT infrastructure. Implementation of policies that will encourage investment in ICT reduction tariff on import of ICT infrastructure, in order to promote affordability and wide range usage at all levels of the educational system. The importance of youth participation in ICT decision- making processes cannot be over emphasized, therefore youth participation in ICT policy-making processes at the national, state and local government levels should be encouraged and supported by all stakeholders.

SUGGESTION AND CONCLUSION

Distance learning is capable of enhancing human productivity for the development of nation economy, for Nigeria to realize and enjoy the benefits of electronic education, education advancement and stand in the committee of nations with an improved educational standard that is needed. The federal, state and the local government of Nigeria must develop positive attitude toward the introduction of computer based educational system in Nigeria from the elementary stage and intensify science and technology education at the Universities, Polytechnics and Colleges of Education to cope with the rapid global advancement in the field. There should be an empowerment of Nigerians in respect of their purchasing power and computer systems should be made available at a low cost prize or subsidized by the government

and involve communities in the educational process especially the technological education policy formulation for both implementation and monitoring.

Provision of functional infrastructure facilities backed up with good maintenance culture for a better electronic educational process should be in place, also exchange experiences and information in the field of electronic education among the developed nations of the world. There should be training and retraining of personnel to cope with technological improvements in educational system all over the world, build up institutional capacities in effective and efficient programming, financial management and budget execution and enforce cost-sharing and cost recovery policies. Nigerian government should give full support to the activities of the Association of Education in Africa and its Working groups, and involve out development partners and Non-Governmental Organisation in our planning implementation. Also support the activities of Non-Governmental Organisation in the field of education such as the Forum for African Women Educationist (FAWE) and exchange ideas on electronic education initiative.

In conclusion, it is believed that if all these suggestion are put in place. E-educational process will be fully realized in distance educational system and improve Nigeria's educational system and standard. This will enable Nigeria to find herself among committee of nations with developed on-line educational system for a better national productivity for economic development.

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FLIPPING THE CLASSROOM:
WHAT WE KNOW AND WHAT WE DON'T

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ABSTRACT

Flipped classroom is an element of blended learning and it is the reverse of the traditional classroom. The students do not listen to the lectures delivered in the classroom but outside the classroom through online video lecture. The teachers record themselves explaining the subject or get videos from free website such as Youtube to share with students to be watched outside the class. The flipped classroom has several advantages; students become more motivated and confident while discussing in the classroom because they have prepared by watching video lectures before coming to class, the classroom activities become more student-centered rather than teacher-centered because the teachers just act as facilitators. However, some disadvantages are also found in the flipped classroom It is a new model of learning and not all teachers and students are ready to apply it. This paper will briefly explain the use of flipped classroom as a new model of teaching-learning activity.

Keywords: Blended learning, Flipped classroom, Teaching and learning activities, Student-centered.

1. INTRODUCTION

Technology plays a very important role in reforming education from conventional to technology-based learning. The significant growth of technology in education has replaced the traditional learning such as using the blackboard and chalk in explaining the subject to technology-based learning such as doing homework on the laptop, internet, or tablet (Evans, 2011). Living in the current digital age enables everyone to easily access the learning materials anytime and everywhere using technology tools (Fu, 2013). Therefore, it has facilitated intensive communication among learners as well as between learners and the instructor whether in the classroom or outside. Adam and Nel (2009) stated that in establishing two way communications between teachers and learners, some technology tools have been applied and adapted in education.

Although technology has been widely applied in education, the significant role of the traditional classroom cannot be ignored. The traditional learning such as physical attendance to the classroom is very important for face to face interaction (Raths, 2014). Therefore, blended learning comes as one approach that combines the traditional classroom with technology-based learning. Blended learning does not ignore the traditional learning because it applies both face to face interaction in the classroom and online multimedia technology outside the classroom (Fearon, Starr, & McLaughlin, 2011). Blended learning is a model of teaching-learning with technology-assisted; it blends a traditional learning with technology-based learning (O'Connor, Mortimer, & Bond, 2011).

Blended learning is a general scope of teaching-learning model. According to Staker and Horn (2012), there are four models of blended learning and the flipped classroom is one element of rotation model in blended learning.
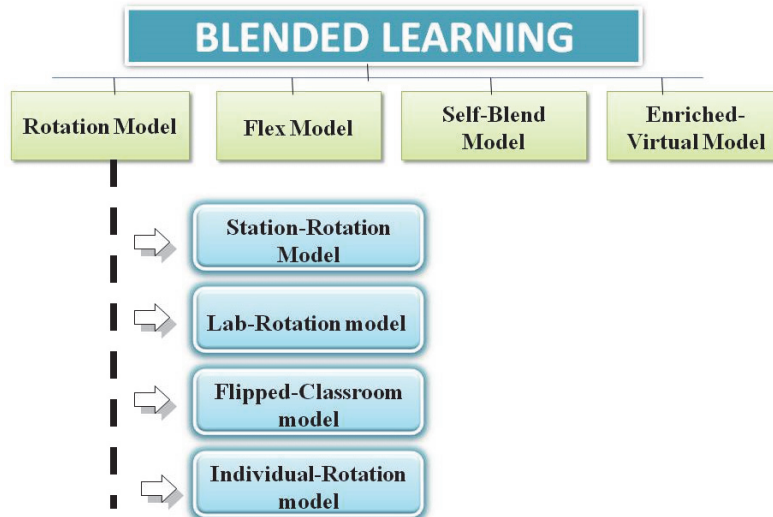
Figure 1: Blended learning models (Staker & Horn, 2012)

One element of blended learning well-known as being applied in the current time is the flipped classroom. This model is the contrary of traditional learning; students do not listen to the traditional lecture in the class but receive video instruction outside the class Bishop and Verleger (2013) stated that flipped classroom is a new model of learning that developed under the blended learning model, where students will not listen to lectures in the classroom but at home. In flipped learning, the lecture video is shared by the instructor as a learning activity outside the classroom. The traditional classroom lecture will be moved to the video which allows students to watch and repeat it several times as needed. Hamdan, McKnight, McKnight, and Arfstrom (2013) stated that online video lecture helps students watch learning material everywhere outside the classroom and they can repeat as many times as necessary. This paper will briefly explain the use of flipped learning or flipped classroom as a new model of teaching-learning activity.

2. FLIPPED CLASSROOM

The Flipped classroom had its roots in the development of technology from one century to another. Technology movement began with the printing press in the thirteenth century until the invention of the World Wide Web (WWW) in the twentieth century (Bishop & Verleger, 2013). In 2001, Massachusetts Institute of Technology (MIT) took the first step by designing Open Course Ware or Open Educational Resources (OER) and providing learning resources such as text books and videos; this step has influenced the emergence of flipped learning several years later(Bishop & Verleger, 2013). In 2006, Salman Khan as the alumnus of MIT continued the program of MIT (Open Course Ware) with the establishment of Khan Academy; he provided more than 3200 videos from different fields of study for free online access (Bishop & Verleger, 2013). According to McDowell (2010), Khan Academy is a non-profit organization to serve education in the world and his mission is "*providing a high quality education to anyone, everywhere.*" Ani (2013) mentioned that at least 3,300 videos at Khan Academy have been accessed more than a hundred million times.

In 2007, two high school teachers in Colorado, Jonathan Bergmann and Aaron Sams tried to record the lecture video for supplemental students' learning materials. Their practice in recording the lecture video would grow and today is called Flipped classroom (Raths, 2014).Their idea came from their difficulty finding the time to re-teach lessons to their students who were sick, absent or could not attend class. With a budget of only USD50, they tried to record their own video and post edit online for students; finally all students whether they were sick or not started accessing the flipped lecture video at home for review and reinforcement (Tucker, 2012).Once Bergman and Samm posted their lecture video online, other students and teachers throughout the world were inspired to begin using the flipped learning and nowadays it continues to evolve, and is developed and modified by teachers and university lecturers (Tucker, 2012).

Flipped classroom is the reverse of the traditional classroom and it is also called the reverse classroom. Students follow the lectures outside the classroom with the instruction of video and do interactive discussion while in the class (Bishop

& Verleger, 2013). Bergmann and Sams (2014) stressed that the flipped learning model established less lecturing and more activity in the classroom; group activity was usually conducted in the flipped classroom to build an interactive and active learning. The learners have a great time to exchange and elaborate their idea during the class discussion. Two strong elements in the flipped classroom are using technology media as the instruction of learning while outside the class and establishing interactive and communicative learning while inside the class (Zappe, Leicht, Messner, Litzinger & Lee, 2009). Therefore, both inside and outside the class activities are very effective for the student learning process.

Because of its new model and because it brought a new atmosphere in teaching and learning, the flipped classroom began to be applied by many teachers and lecturers worldwide. Bergmann and Sams (2014) stated that nowadays the flipped learning becomes an instructional method that begins to be applied in schools throughout the world. The flipped classroom is very flexible to be adopted whether by teachers or lecturers. It can be applied to any level of education, but it depends on the learners, resources and time available (Milman, 2012).

3. ADVANTAGES OF USING FLIPPED CLASSROOM

Flipped classroom offers many benefits. It will save the time of students' listening to lecture in the classroom because they can watch the lecture on video at home. Classroom activity will be used to solve problems and hold discussions. In the flipped classroom students watch the video lecture at home which replaces live instruction in the classroom and while in the classroom they do more interactive and active activity such as working with peers (Cohen & Brugar, 2013). Therefore, as stated by Milman (2012), the flipped classroom will save the students' and teacher' time; valuable time can be used in the classroom for discussing rather than listening to the lectures. The flipped classroom will make for more efficient instruction and activity during classroom hours and because students have already prepared learning materials before coming to the class, they have to be responsible for their own learning and the teacher will act as a facilitator to guide more in learning rather than teaching. Zappe et al. (2009) stated that the Flipped learning will save students' time to learn actively, classroom activity will not sacrifice valuable time needed by students to cover the content. Moreover, flipped classroom will make students more motivated and confident in the classroom because they have already prepared their learning while outside it (Hamdan et al., 2013).

According to Fulton (2012), advantages of applying flipped learning include: students will move at their own pace, teacher will be able to know students' difficulties in doing the homework in the class, the teacher can easily update the curriculum and provide it depending on learner needs, the activity in the classroom is more effective and active, teacher can easily observe students' interest and they will use the technology tools as the appropriate learning media in the 21st century. While according to Driscoll and Petty(2013), with the guidance of technology media, the students will be more autonomous in learning activity and the lecturer will act as a facilitator and motivator.

Bergmann, Overmayer, and Willie (2011) mentioned that there are three of most applicable Flipped learning for students: the activity of learning will continue not just in the classroom, the content of learning will be designed according to students' need and the student-lecturer interaction can increase. Students will prepare to study hard outside the class, while in the class they will perform in discussion (Overmyer, 2012). Millard (2012) explained five reasons to benefit from flipped learning: focuses on classroom interactive discussion, provide teacher freedom, teacher can establish personal communication with students regarding the subject, homework and any other progress, establish a strong team work and increase student engagement.

Cohen and Brugar (2013) stated four advantages of flipped learning: students will take responsibility for their own learning, they can watch and repeat the online video lecture as necessary, students and teacher establish personal interaction whether inside or outside the classroom and the instructor provides personal instruction. Schmidt and Ralph (2014) stressed that students will be ready to solve the problem and investigate the solution in the class because they have already prepared at home by watching the online video lecture before coming to class.

The flipped classroom has a variety of ways to apply for teaching-learning activity (Schmidt & Ralph, 2014). The lecturer should be creative in designing the teaching-learning process, use any kinds of media for the outside class interaction, and share videos related to students' learning. The flipped classroom is one model that makes students more active and interactive both in the classroom and outside it. When teachers apply Flipped learning, it means that they apply active learning. Active learning has been stressed by many educational theorists over the last century such as Dewey (1938); Kolb (1984); and Slavin (1995). Therefore, it is not something new as a learning approach in education.

According to Nichols (2012), in the flipped classroom, the students have time to review the subject, the students who cannot attend class will obtain the materials of learning, the students do not need to do homework and actively work, discuss and solve problems in a group. For the teachers, he stated that the lecturer acts as a facilitator who facilitate the learners with more practice, the lecturer involves in students' learning activity or acts equal with the students and they always connect with their students both inside and outside the class.

The following schema presents the distinction between the flipped classroom and traditional classroom; the flipped classroom shows more advantages than the traditional classroom.

Flipped Classroom

Teacher instructs lesson at home (Video/ podcast/ book/ website)

Students work in class.
- Deeper understanding of concept, application, and connections to content are made
- Students receive support as needed.

Traditional Classroom
- Teacher instructs
- Students take notes
- Students follow guided instruction
- Teacher give assessment
- Students have homework

Figure 2: Comparison between Flipped and Traditional classroom (Nichols, 2012)

4. THE DISADVANTAGES OF USING FLIPPED CLASSROOM

Flipped classroom is a new model that is applied in the teaching-learning process and not all teachers are successful in applying it. Flipped learning becomes a challenge for the beginners or for those applying it the first time. Collins (2011) stated that those who start applying a new model in teaching usually face a challenge even after they are already well-prepared. Usually the teachers have a great spirit in shifting traditional learning to flipped learning, but the students are not ready for this change. When teacher is very enthusiastic in applying the flipped classroom, students will react negatively and not all of them want to watch the video outside the class (Raths, 2014).

Besides that, teacher has to spend much time not only to teach students in the class but also outside the class, also to design or look for the best video to be shared with students (Bergmann & Sams, 2014). It is very difficult for the teacher who applies the flipped learning the first time because of unfamiliarity with the activity of teaching-learning inside and outside the class. Since the teachers will act as facilitators they need to spend more time controlling the students. More time will be spent by the teacher to design good learning materials to make students interested in learning outside the class.

Enfield (2013) stated that if the learning instruction is not interesting, it will make students not interactive in learning. He also stated that in the flipped classroom, the teacher needs money to produce the material. Milman (2012) stressed that poor quality of video becomes the problem in flipped learning. Milman (2012) also stated that students with

learning disabilities will have problems with flipped learning. Therefore, flipped classroom is not supported to be applied for disabled students.

5. USING ONLINE VIDEO LECTURES IN FLIPPED CLASSROOM

A large percentage of internet users in different world regions showed how the internet grew fastest in the world and accessing online vides becomes easier for everyone. In 2013 the access of online video by adult Americans increased from 69 percent in 2009 to 78 percent in 2013, most of them accessed YouTube video (DeCesare, 2014). Sife (2013) declared that in the beginning of 2012, there were more than 2 billion internet users in the world.

Many researchers and educators argue that the flipped classroom is synonymous with using technology media as the instruction of learning and specifically video which replace traditional lecture in the classroom (Overmyer, 2012). In flipped learning, the video provided to students can be recorded by the teachers themselves or adopted from free websites. There are many educational videos provided on the free sites such as YouTube, TED-Ed, and Khan Academy (Raths, 2014). Ash (2012) also stated that in sharing the online video course, the lecturer can record his or her own video, also the video provided on free websites can be used by lecturers for students' learning activity outside the classroom, especially the video on sites such as YouTube EDU, Khan Academy, and PBS.

Students are allowed to watch online video lectures anywhere outside the classroom. At any convenient place and time, students can watch the video (Hamdan et al., 2013).The lecturer should pay attention with the common criteria of online video lecturers in the flipped learning. Evans (2011) suggested the tips for flipped video, by stating that the video should be short, including picture, animation and humor; every content on the video should excite students. Bergman and Sams suggested that the flipped online video lecture should be interactive and short. Raths and Graham Johnson also suggested that the long video should break up into sections with interactive elements (Raths, 2014). Raths (2014, p. 19) "That means for a 4th grader, your videos should be no longer than four to six minutes; and for a 10th grader, that means 10- to 15-minute videos."

In the first beginning of applying the Flipped classroom, sometimes teachers face the obstacle that not all students want to watch the flipped video outside the class. To solve this problem, Raths (2014) suggested that when the students do not watch online lecture video outside the class, the lecturer should avoid explaining the lecture already shared on the video, this way will help students to watch the video at other times. Teacher should give quizzes regularly to make the students watch the video (Enfield, 2013). Another problem faced in the flipped classroom is the assumption that the flipped classroom is difficult to be applied in areas with limited internet access because students will have obstacles in watching the video. This assumption is not true; the flipped classroom can be applied even in such areas. As an alternative, the teacher can burn DVDs for sharing with students (Raths, 2014).

Although the video is an important tool in the flipped classroom, teacher should not only focus on the video and ignore other significant activity in the flipped classroom such as teacher and student interaction outside the class, students' interactive activity inside the class and teacher's role as a facilitator in teaching-learning activities. Tucker (2012) stated that flipped classroom is not only instructional videos used for students' learning activity, but also use all integrated approaches to make the flipped learning comfortable for teaching and learning. Flipped classroom not only focuses on how to use the video lessons, but also how teachers interact with students inside or outside the class (Sams & Bergmann, 2013).

6. CONCLUSION AND POTENTIAL FUTURE RESEARCH

Students of the current era are more engaged with technology than the previous generation. The hope is that with the development of technology, education also developed and technology can be used as a source to facilitate the teaching-learning process. Flipped classroom as an element of blended learning is a new model applied in current education and it becomes an alternative model to develop the quality of teaching and learning. The learning process will take place not only in the class but also outside it; students will take responsibility for their own learning and learn at their own pace. For the future research in the flipped classroom, the writer suggests that researchers implement the

flipped classroom in areas with limited internet facilities. As Raths (2014) mentioned, although there is a limitation of internet access to share the online video lectures with learners, the DVD can be used as an alternative tool for video sharing. Experimental research can be conducted with other subjects that interest the researcher. By using an experimental class and control class one can investigate how effective the application of flipped classroom is compared to the control or traditional classroom.

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Implementing a Videoconferencing Studio in Cape Verde to Support a Blended Learning Education System

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Abstract

In 2004, the Calouste Gulbenkian Foundation invited the University of Aveiro to develop an education and training program in advanced topics of ICT for Cape Verde. The focus should be on technologies to support the development of distance education. Two years later, when the program was started, the University of Aveiro had a high-performance videoconferencing Studio installed by the Foundation for National Scientific Computing. However, the investment to duplicate this high quality structure and operating costs were not compatible neither with the project's budget nor with the technological options available in Cape Verde. This paper demonstrates the decision-making process by an economically viable option to meet the needs and local peculiarities.

Keywords: b-learning; computer resources; e-resources; infrastructure; videoconferencing equipments

Introduction

The implementation of a videoconferencing studio in Cape Verde providing support for blended-learning system adopted as well as its use in the final examinations (jury's meeting) of the Masters in Multimedia in Education and in Didactics of Language (speciality of Portuguese as a second language) was the subject of this article.

These courses were developed in January 2006 by the University of Aveiro (Portugal) at the Institute for Higher Education (Cape Verde) funded by the Calouste Gulbenkian Foundation (FCG), (Ramos, 2005).

Its adoption allowed to reduce physical journeys and promoted greater professor-student interaction subverting the paradigms of the current teaching-learning university model, focused on theoretical classroom of little interaction or even the models purely based on virtual learning environments (VLE).

It is another technological possibility, although it's proper, correct, timely and effective manner of use becomes necessarily by didactic innovation actions, language modification and paradigm shift as well as standardization of procedures and professionalization in the development, production and generation of content.

This paper is part of the results from the project "The Applicability of Desktop Videoconferencing Systems over Broadband Networks to Support the b-learning Education System" funded by the Portuguese Foundation for Science and Technology (FCT) and European Social Fund (ESF), under the 3rd Community Support Framework, 2000-2006.

Network infrastructure in Cape Verde

The IP connection available at the Institute for Higher Education (ISE) during the year of 2006 was a 512 kbps ADSL (no QoS). The cost was 15.000$ (€ 135,88) per month (up to 1 MB downstream) plus 15$ (€ 0,1359) per additional Mb. Consulting the CVTelecom website we note that the 512 kbps downstream allow theoretically the "maximum" 128 kbps of upstream, bandwidth critical for a video-conference of quality, that is, depending on the MCU capacity, participants will connect to each site in the site's speed slower or each site will connect at the speed of your call (a participant with 128 kbps, for example, will only receive 128 kbps of a participant connected in 2 Mbps (reserved speed for videoconferencing service of FCCN). This limitation does not occur in Access Grid (AG) rooms.

The upstream band was fixed (CVTelecom), for the available packages of 256, 512, 1024 and 2048 kbps. In this way, the upgrade to a 1024 kbps ADSL or higher was not justified because it would keep the same maximum speed (not guaranteed) of upstream (128 kbps).

ADSL connections in Cape Verde	
Upstream	Downstream
128 kbps	256 kbps
128 kbps	512 kbps
128 kbps	1024 kbps

source: http://www.nave.cv/cvtelecom/empresa/html/adsl.htm

In addition, most videoconferencing terminals or MCUs expect to find a fixed IP address (specific and unique) which typically ADSL connections do not provide. However during a particular connection the variable IP remains fixed which allows its identification and use.

Another product option offered by CVTelecom was the IP Service, with synchronous speeds, in packages ranging from 28 to 6144 kb/s of much higher cost. A connection of 512 kbps synchronous and fixed IP would have a monthly fixed cost of 560.000$ (5,072 €) which could derail its use by need/cost/benefit ratio. However it would be the best option not discarding the hypothesis that in Cape Verde educational institutions could have treatment and differentiated possibilities, as is the case in Portugal.

source: http://www.nave.cv/cvtelecom/empresa/html/internet.htm

The widely accepted minimum bandwidth for videoconferencing H. 323 is 384 kbps (with QoS) at 30 fps. In commercial connections (cable and xDSL) with this limit, only the downstream can handle it, not upstream. In addition, many clients/endpoints are constantly experimenting and resetting the bandwidth and the frame rate based on congestion that they collect. Add to this a very poor quality, including severe losses from audio and video frames. The solution would be to choose or adjust a specific call speed. Values between 198 kbps or 256 kbps usually work well, and give a sufficient video quality for a standard meeting. A frame rate of 8-15 fps can also be supported.

Initial tests with the ADSL of 128 kbps also revealed that the speeds were only nominal, as they were (and still are) subject to interference from numerous factors including the bottleneck bandwidth due to the level of peripheral use and even the switching load imposed by intermediate

equipment of links mediation. Therefore, for better assess the conditions in Cape Verde we proposed the following list of procedures using only one device (PC or laptop) with multimedia support (sound, microphone and webcam) connected directly to the existing ADSL connection (no sharing and without processes and/or parallel applications):

1. Verification of the actual speed of ADSL connection.

In the FCCN website there is a functionality for verification, the Speed Meter, which allows to test the bandwidth by flow measurements while not ensuring total reliability of the results presented.

source: http://speedmeter.fccn.pt/

Bandwidth test performed from the CEMED in 27/06/2006:

Technology: Ethernet - Contracted Speed: 10 Mbps

Amount of Data Test: 13 MB

Start Date: 2006-06-27 14:38:22 - End Date: 2006-06-27 14:38:43

Transmitted Data: 13396.08 KB

Download Time: 20.454 sec.

Protocol: IPv4 (Could not perform the test in IPv6).

Useful bandwidth: 5.24 Mbps

Can perform downloads until 670.65 KB/sec.

2 Mbps	ADSL/CABLE	
4 Mbps	ADSL/CABLE	
5.24 Mbps	CEMED	
8 Mbps	ADSL/CABLE	
10 Mbps	Ethernet	

	2 Mbps	4 Mbps	5.24 Mbps	8 Mbps	10 Mbps
1 MB	4.1 sec.	2.05 sec.	1.56 sec.	1.02 sec.	0.82 sec.
2 MB	8.19 sec.	4.1 sec.	3.13 sec.	2.05 sec.	1.64 sec.
4 MB	16.38 sec.	8.19 sec.	6.25 sec.	4.1 sec.	3.28 sec.
16 MB	65.54 sec.	32.77 sec.	25.02 sec.	16.38 sec.	13.11 sec.
64 MB	262.14 sec.	131.07 sec.	100.07 sec.	65.54 sec.	52.43 sec.

Bandwidth test performed from the ISE in 19/10/2006:

Technology: ADSL - Contracted Speed 256 Kbps

Amount of Data Test: 941 KB

Start Date: 2006-10-19 11:18:27 - End Date: 2006-10-19 11:20:04

Transmitted Data: 941.47 KB

Download Time: 96.268 sec.

Protocol: IPv4 (Could not perform the test in IPv6).

Useful bandwidth: 80.10kbps

Can perform downloads until 10.01 KB/sec.

56 Kbps	Modem	
64 Kbps	RDIS	
80.1Kbps	ISE	
128 Kbps	ADSL/CABLE/RDIS	
256 Kbps	ADSL/CABLE	
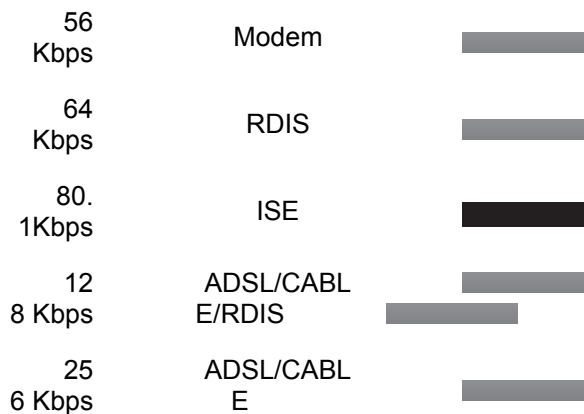
	56 Kbps	64 Kbps	80.1K bps	128 Kbps	256 Kbps
1 MB	149.8 sec.	131.07 sec.	104.73 sec.	65.54 sec.	32.77 sec.
2 MB	299.59 sec.	262.14 sec.	209.45 sec.	131.07 sec.	65.54 sec.
4 MB	599.19 sec.	524.29 sec.	418.91 sec.	262.14 sec.	131.07 sec.
16 MB	2396.75 sec.	2097.15 sec.	1675.63 sec.	1048.58 sec.	524.29 sec.
64 MB	9586.98 sec.	8388.61 sec.	6702.51 sec.	4194.3 sec.	2097.15 sec.

2. Internet Protocol (IP address) - equipment identification (PC or notebook).

There are several ways to perform this procedure. In Windows XP just open the "Network Connections" and check the connection details, that is, the IP address and subnet mask. If the connection icon is available in the lower right corner of the taskbar it is possible to open a menu with the right mouse button and choose "status". The "support" tab will inform the IP address, subnet mask and default gateway.

Another option is to use some of the various websites that identify the IP of your connection.

source: http://www.hospedia.com.br/ip/index.php

3. Perform a traceroute to the Gatekeeper of FCCN (gk.fccn.pt).

In a DOS window ("Command Prompt", in Accessories) could be typed: "tracert gk.fccn.pt" or even "tracert 193.136.252.45" (without the quotes), followed by an Enter.

The following example performs the traceroute from CEMED: tracert 193.136.252.46

Tracing route to gk.fccn.pt [193.136.252.46] with a maximum of 30 hops:

1   <1 ms 1 ms 1 ms gt.cemed.ua.pt [193.137.87.62]

2   <1 ms <1 ms <1 ms cic-b07-sw03-12g.core.ua.pt [10.0.240.3]

3   1 ms <1 ms <1 ms fw1.core.ua.pt [193.136.86.222]

4   1 ms 1 ms 1 ms cic-b06-sw01-12g.core.ua.pt [193.137.173.254]

5   2 ms 3 ms 3 ms Router2.Porto.fccn.pt [193.136.1.193]

6   5 ms 5 ms 7 ms Router3.10GE.Lisboa.fccn.pt [193.136.1.221]

7   6 ms 6 ms 5 ms ROUTER7.GE.Lisboa.fccn.pt [193.137.0.26]

8   8 ms 7 ms 7 ms gk.fccn.pt [193.136.252.46]

The number of hops can then be evaluated (in the test example above, they were 8)

through which the information can be verified and potential losses that might arise.

These data could also be copied from the DOS window and sent.

These would be important data because the calls to the videoconferencing system of the UA are made through the Gatekeeper of FCCN.

4. Another interesting test to be done would be a traceroute to the CEMED, to test the link without using the videoconferencing system of the UA.

The point here would be gt.cemed.ua.pt or 193.137.87.62, identifying the number of hops.

5. Using any messenger (MSN, Yahoo, Icq, etc.) in real-time to assess the tests in Cape Verde and in UA, would it be possible to make a call using the messenger itself as well as a client like Netmeeting which is already installed on Windows XP (but usually is not active). To enable it just click Start, click Run, type "conf" and click Ok. After a quick setting it is possible to make calls from IP to IP.

6. The next test, still using NetMeeting would use their H.323 compatibilities and perform a call to the videoconferencing system of the UA through the Gatekeeper of FCCN. In the NetMeeting Tools menu, click on Options, and then click Advanced Calling, identifying the Gatekeeper of FCCN, gk.fccn.pt or 193.136.252.46 with the data of connection.

After these basic initial assessments, other equipment could be tested on the same connection, including dedicated codec (hardware) for video conferencing and a camera of better quality, in PTZ standard.

PTZ is short for Pan-Tilt-Zoom and describes a function Zoom in and Zoom out that works along with the embedded Zoom.

Standard Studios of FCCN

In its pilot project, financed by POSI, the Foundation for National Scientific Computing (FCCN) provided under a free-lease agreement a set of six pilot institutions, a standard videoconferencing studio.

It is a high-quality installation and possibilities, although the location, diversity of uses of the room and little interest by the teaching community hampers a greater using and experimenting of the same at the University of Aveiro.

source: http://www.fccn.pt/index.php?module=pagemaster&PAGE_user_op=view_page&PAGE_id=205&MMN_position=89:4

Some institutions not covered as the Faculty of Science and Technology from New University of Lisbon (FCT/UNL) decided to join the project by purchasing the same equipment available to other institutions (Monteiro, 2006).

source: http://www.fct.unl.pt/

The list of equipment for videoconferencing room and its budget allows for a more accurate analysis of the systems, brands, models, values, suppliers, involved in the implementation of a standard installation FCCN. A total of € 37.169,99.

In the configuration shown, the codec H.323 Aethra model AVC8400 is the standard equipment of videoconference system, being the item with higher cost, quoted at € 8.330,00.

List of Equipment for Videoconferencing Room

(FCCN standard for Studios project)

Audio and Video	Wireless Lavalier Microphone	AKG	WMS-40PT	284.30	1	284.30 €
	Handheld Microphone Wireless	AKG	WMS-40HT	220.30	1	220.30 €
	Handheld Microphone Wired	AKG	D-3700M	108.20	2	216.40 €
	Mixer Audio Without Amplification	Phonic	MM-1805X	232.60	1	232.60 €
	Audio Amplifier 5.1	Pioneer	VSX-D714	244.00	1	244.00 €
	Speaker Set 5.1	Bose	Acoustimass 10 III	1,276.28	1	1,276.28 €
	Video Projector	Benq	PB7220	1,470.00	2	2,940.00 €
	Echo Cancelling	ClearOne	GT-1524	1,880.00	1	1,880.00 €
	Player Recorder DVD / MPEG2	Panasonic	DMR-E85	678.00	1	678.00 €
	Technical Cabinet 24U's (w/ glass door, rollers and a fixed shelf)	Olirack	24U's	373.10	1	373.10 €
	Tripod Table for Microphone	EuroMet	ATS-88-c	37.41	2	74.82 €
	Tripod Floor for Microphone	Proel	RSM-170	24.00	1	24.00 €
Videoconferencing	Videoconferencing System H.323	Aethra	AVC8400	8,330.00	1	8,330.00 €
	Document Camera	Samsung	SVP-5500DX	1,565.00	1	1,565.00 €
	Interactive Whiteboard	Hitachi	Smartboard Serie F75"	1,585.00	1	1,585.00 €
	PTZ Cameras	Sony	EVI-D100P	996.30	2	1,992.60 €
	Tripods with Static Heads	Manfrotto	190PRO + 460MG	260.30	2	520.60 €
	Digital Microphone	Aethra	360º	403.75	1	403.75 €
Informatics	LCD screen 15"	Hyundai	Image Quest L70S	329.00	1	329.00 €
	PC (P4, 3GHz, 2GB RAM, DVD Burner, 2 x video input, sound card Creative Audidgy LS, RACK)	Niposom	Servidor Proj. Estúdios	1,500.00	1	1,500.00 €
	Keyboard and mouse wireless	A4Tech	KBS-8533RP	21.00	1	21.00 €
Signal Switching	Matrix VGA	Comm-tec	MX-88RA	1,799.00	1	1,799.00 €
	Matrix AV	Comm-tec	MX-1616CA	1,470.00	1	1,470.00 €
Control	Multifunctional remote control	Universal Remotes	MX3000	507.00	1	507.00 €
	Transportation System IR	Catlink	Kit Studios	70.00	1	70.00 €
	IR/RS232 Converter	Adicon	The Ocelot	200.00	1	200.00 €
	RS232 Control System	DKT	Freeway FWAY-IR	1,650.00	1	1,650.00 €
Accessories	Powerstrips (8 outlets without circuit breaker)			41.00	2	82.00 €
	PatchPanel 24 electrical outlets			45.62	2	91.24 €
	Support for interactive whiteboard			310.00	1	310.00 €
	Wiring to include in the rack			1,300.00	1	1,300.00 €
Miscellaneous	Adjustments in the room (variable cost between 5K to 20K, including screens, lighting, wiring system, etc.)			5,000.00	1	5,000.00 €
Total						**37,169.99 €**

source: http://ferrari.dmat.fct.unl.pt/personal/mle/PUBL-rdf/E-learning05.pdf

The AVC8400 model available in 2002 was replaced in 2006 by the AVC8500 model containing the latest technologies from Philips Trimedia and keeping the same capabilities of the previous model in addition to new features such as dual screen emulation on a single screen (H.239 Dual Video), 16:9 format support and 4 Mbps IP bandwidth. The AVC8500 model is quoted currently € 10.064,00.

This hardware-based codec follows the line of integration of major suppliers of H.323 videoconferencing in their products, being specifically designed to take on the task of compressing and decompressing allowing the global terminal to reach a good performance.

Unlike a standard studio that follows the specifications of FCCN (for Studios project), a basic videoconferencing studio, mobile or transportable will have a very different cost, according to the various options available in the market that follow the specification H.323. These options and products similar to PCs can sustain a rate of 15-30 fps (frames per second) and an extended variation of quality/bandwidth settings (128 kbps-1.5 Mbps) of calls, so that the quality of the videoconferencing sight on someone's desk can be the same to that of bigger and more expensive conference room-based.

Products available include Zydacron OnWAN series and VCON.

More recently, the trend is towards external devices "plug and play" that are connected to a USB port. The extra processing power required for encoding is included in the camera/USB device with the USB port providing the "bandwidth" required to pass the compressed video from camera/device to the PC.

The products available in this approach are the ViaVideo of Polycom and VCON ViGo.

Another videoconferencing terminal is the device single not based on PC.

These electronic devices are specialized hardware (combinations of system/camera/microphone that are usually on top of a TV monitor) that provide high quality for medium or large videoconferencing rooms. They do not run other programs such as a PC-based terminal can do and they are bigger and more expensive, although often such usage is equally or simpler than USB devices on a desktop PC.

The Polycom ViewStation and Tandberg 880 are examples of H.323 desktop devices.

Although the hardware-based terminals cost more than those based only on software (ranging from cheap to free), the extra cost is often justified in order to achieve a quality that is acceptable in video conferencing beyond a casual use.

Polycom is considered the world's largest maker of equipment for videoconferencing.

FCCN itself has, on its premises in Lisbon, a videoconference room with space for meetings up to four people.

This room has a Polycom iPower 900 series equipment (PC-based) using a 29" monitor, that is, a compatible configuration and much more accessible.

source: http://www.fccn.pt/index.php?module=pagemaster&PAGE_user_op=view_page&PAGE_id=206

System features:

Panoramic Controllable Camera; Microphone (TableTop); 29" Monitor; TableTop ImageShare (allows users to share the desktop of your notebook with remote participants). As additional equipment the room offers an auxiliary document camera, which allows filming a book, a transparency or even an article from a newspaper.

Software-based clients

NetMeeting is an example of H.323 client based on software. The software-based clients often have a low cost of implementation due to low cost of simple USB cameras and cheap microphones. The problem is that software clients require very powerful systems to work well, and some clients do not work correctly together with other H.323 systems. Software clients use

the main CPU system to encode and decode the video. This causes a large system overhead, often generating a wobbly video or other problems. However the PCs are becoming ever faster. The VCON recently introduced its vPoint for software-based clients. The vPoint software can be used in conjunction with VCON VIGO to USB-based clients, to the accelerated handling of the video or as standalone software with a standard USB or firewire camera.

There are many options for videoconferencing and many manufacturers. Not always costs are low. There is expensive equipment. For the needs of this project we sought lower-cost options, because the AU already has excellent facilities (Studio and auditorium) to cater to larger groups. The definition was marked by two variables: resources available x needs (number of units and type of room to be satisfied). Without these limits the search would not become objective. The lower cost option (practically free), software-based and already included in Windows remains the NetMeeting (there are other options for Windows and for Linux). It supports audio and video on H.323 standard and can make and receive calls in this standard. The problem was previously the processing speed (since the codec is software based), not something very critical nowadays. In Windows XP it is already installed by simply activating it.

source: http://www.microsoft.com/brasil/windowsxp/using/networking/learnmore/tips/aljandali1.mspx

To enable NetMeeting on Windows XP: 1. Click Start, Run and type Conf. 2. Click OK. 3. In NetMeeting Wizard, provide the required information and then select the box NetMeeting shortcut on My Desktop (or in the Quick Launch bar).

Whereas, nowadays, virtually all PCs and notebooks already have video and audio resources (sound, microphones, webcams) makes this the most economic solution for end users. The limitation imposed by the video quality low cost webcams can be minimized with the use of better quality cameras.

Polycom has the product: PVX (single use)

source: http://www.polycom.com/products_services/1,1443,ee-4367-7953,00.html

One option of best quality and portability to Cape Verde would be an integrated camera and hardware codec. Polycom has the products V500 and VSX 3000.

source: http://www.polycom.com/products_services/1,1443,ee-6574-6575,00.html

source: http://www.polycom.com/products_services/1,,ee-35-6574-6197,00.html

V500 (to serve up to 5 people): Ideal for small environments, the V500 is the new compact and innovative videoconferencing from Polycom. Provides videoconferencing with transmission speed of up to 768 kbps over IP/SIP and up to 128 kbps in ISDN (the customer must choose at purchase); Has the support of integrated AES encryption to provide complete safety in video calls; It presents H.264 video technology that allows to play 30 fps even at low rates of transmission speed; Offers exceptional audio quality, similar to CD, due to wide audio bandwidth to 14 kHz; Has noise suppressor, automatic gain control and echo cancellation; Has intuitive interface. This unit already contains almost everything is needed (except the monitor) and can be connected to any TV or projector.

Polycom V500 IP 2.199,00 € (+16,00% IVA)

VSX 3000 (to serve up to 4 people) versatile, the VSX 3000 provides videoconferencing with quality image and audio, and even allows that flat screen to be used as a high-resolution PC

monitor. Includes camera, 17" flat screen monitor, speakers and built-in microphones. Provides transmission speeds up to 2 Mbps over IP/SIP and up to 512 kbps in ISDN (the customer must choose at purchase); Possibility to performing hybrid multiconference up 4 points in ISDN and IP (Optional); Content capture for live broadcasts by IP using Streaming Video; Displays H.264 video technology that allows to play high-quality images even in low rates of transmission speed; Count with integrated AES encryption integrated to provide complete safety in video calls; 14 KHZ of audio to deliver exceptional sharpness; Has noise suppressor, automatic gain control and echo cancellation; Displays intuitive interface, making it easy to use.

Polycom VSX 3000 IP 5.499,00 € (+16,00% IVA)

For the CEMED it could be adopted any of the proposed solutions to Cape Verde, or even better-quality options and features of the Polycom VSX 5000.

source: http://www.polycom.com/products_services/1,1443,ee-185-11034,00.html

The VSX is considered the entry level model among those with the most resources.

VSX 5000 with Media Cart

source: http://www.polycom.com/products_services/1,1443,ee-185-4362-10095,00.html

In configurations that include one or two 32" LCDs VSX 5000 with Video Cart

source: http://www.polycom.com/products_services/1,1443,ee-185-4362-11434,00.html

In configurations that includes a 32" monitor VSX 7000

source: http://www.polycom.com/products_services/1,1443,ee-185-11013,00.html

source: http://www.polycom.com/products_services/1,1443,ee-185-11033,00.html

VSX 8000

source: http://www.polycom.com/products_services/1,1443,ee-185-7292,00.html

Comparison between current Polycom systems

source: http://www.polycom.com/common/pw_item_show_doc/0,1276,3336,00.pdf

In the Rectory of UA Great Hall existed an equipment unused since 2002 (International Public Tender n.º 9 ST/2001), a Polycom VS4000 Release 4.2 FX (August 24, 2002).

source: http://www.polycom.com/common/pw_item_show_doc/0,1276,3147,00.pdf

The firmware has been updated to version 6.05 FX (June 8, 2005) by Roth (2007), in October 2006.

source: https://docushare.louisville.edu/dsweb/Get/Version-11541/VS_rel605_007a.pdf

The location is right next to the FCCN studio, but can accommodate a larger number of people in addition to having a projector high visibility.

For videoconferencing studio of UA were assigned eight IP addresses 193.135.252.128/29, Mask 255.255.255.248

193.136.252.128	Network
193.136.252.129	Codec H.323
193.136.252.130	PC
193.136.252.131	Control System
193.136.252.132	
193.136.252.133	
193.136.252.134	Gateway
193.136.252.135	Broadcast

That is, the IPs 193.136.252.132 and 193.136.252.133 were vacant. One of these IPs could be destined for the VS4000 of Rectory Great Hall. The rack stays very close to the studio that facilitates changing network switch in the Rectory. The other IP could go to the CEMED, making it possible to place a third point in the FCCN network.

Ribeiro (2006) stated "Finally! We saw this in the equipment at site survey in 2004. Yes, you can use this system on videoconferencing network. You may use, for example, the 193.136.252.132. The equipment in the CEMED can receive the 193.136.252.133. Remember that the AV resources that are in a rack are not trivial to porting (nor should they be removed from the studio), but you can use the studio to complement activities that is going on elsewhere as, for example, record videoconferencing sessions or make broadcast sessions. The gatekeeper that must be configured is: 193.136.252.46. The numbers of GDS are: Equip - GDS - IP; Rectory Auditorium - 00351400103311 - 193.136.252.132; CEMED - 00351400103312 - 193.136.252.133. If you wish, we can include these systems in SAG. (sag.fccn.pt)".

- Equipment: Polycom/VS4000 Release 6.05 FX

- Maximum Speed: 2 Mbps (IP, ISDN and Serial)

- Integrated MCU: the introductory guide refers to an optional internal MCU.

- H.239 support: the standard H. 239 - Innovation of 2003 - is based on a simplified version of the collaboration feature "People+Content" of Polycom, offered since 2000.

Collaboration People+Content in VS4000:

- Receives or transmits dual images (receives/transmits both the presenter's video and high-resolution graphics);
- Dual audio (simultaneously transmits audio from microphones and notebooks);
- Supports IP, ISDN and Serial calls;
- Supports dual streams People+Content from any terminal;
- Maximum graphics resolution: Input 1280 x 1024, 60 Hz Output 1280 x 1024, 60 Hz;
- Audio Input for notebook;
- Second output for projector;
- Ethernet 10/100 3-port hub;

In the updated document there is reference to "The following configuration flags must be set to NO in the MGC configuration file 'system.cfg' in order for the ViewStation EX/FX/VS4000 system and MGC gateway functionality to work correctly: GW_EPC_H239".

source: https://docushare.louisville.edu/dsweb/Get/Version-11541/VS_rel605_007a.pdf

- SIP support: SIP is a standard of 2002. No reference was found regarding the implementation of the Basic SIP.

Sony PCS-1P and Polycom V500

Roth (2007) examined the documents received in the Sony Rep CEMED in Porto (Emilio de Azevedo fields) and made a brief comparison between the basic products since both companies (Sony and Polycom) has excellent premium products of extremely high costs which are not justified on grounds of the application.

- Both products are considered basic by their manufacturers, entry models and have very similar features;
- Both are a complete solution (all in one), which includes camera, microphone, codec and remote control;
- Both need a monitor/tv that is not part of the basic product.

Differentials:

1) Camera: the camera of Sony PCS-1P is not fixed to the Codec and can be positioned at another point. The Sony has a PTZ (Pan/Tilt/Zoom) camera complete. The camera from Polycom V500 is integrated and has no zoom (which is not critical for the intended application).

Features of the Sony PCS-1P:

image sensor: 1/4 CCD type; horizontal resolution: 460 TV lines

lens: 3.1 to 31mm (F 1.8 to 2.9); focus: auto/manual; iris: auto

horizontal viewing angle: 6.6 to 65 degrees; zoom: x 10 (optical) and x40 (digital)

pan: (panoramas) +/-100 degrees (left/right)

tilt (vertical gradients): +/-25 degrees (up/down

Polycom V500 features:

horizontal view angle: 60 degrees

pan: (panoramas) +/-20 degrees (left/right)

tilt (vertical gradients): +/-20 degrees (up/down)

One detail to be considered is that when there are problems in the camera or codec, in the integrated solution we are left without the two and in the non-integrated solution we can isolate the problem and use another camera or another codec. But integration facilitates transport.

2) Expandability: only in the PCS-1P (optional, best quality cameras, etc...)

3) Price (Traditel)

source: http://www.traditel.pt/index.html

Sony PCS-1P 3.981,00 € (+16,00% IVA) - Total: 4617,96 €

Polycom V500 IP 2.199,00 € (+16,00% IVA) - Total: 2550,84 €

The difference in the final price, 2067,12 € is not negligible.

One Sony PCS-1P costs almost the equivalent of two Polycom V500 IP.

Sony maintains a website in Portuguese.

source: http://www.sony.pt/

The PCS-1P is on:

source: http://www.sonybiz.net/cgi-bin/bvisapi.dll/templates/neutral_content_product.jsp?BV_SessionID=@@@@2074990680.1161347362@@@@&BV_EngineID=caddiddehjflbemgcfkmcfjfdhl.0&OID=114513

Polycom maintains a website in English for the whole of Europe:

source: http://www.polycom.com/home/1,1254,ee,00.html

The V500 is on:

source: http://www.polycom.com/products_services/1,1443,pw-35-6575,00.html

The Polycom V500 was the indication of Roth (2007) as equipment to be purchased for the CEMED and for Cape Verde due to its excellent cost-benefit ratio.

Besides this factor, this equipment uses the same remote control found in VS4000 which facilitates standardization and utilization.

Ramos (2006) "Ok, accordingly. I appreciate that you proceed with the acquisition".

Ramos Moreira, Roth & Santos (2006) "... to be initially installed for trial operation in October 2006".

Vasco (2006) "Around here everything runs normally. We have acquired the videoconferencing equipment. It works very well".

Videoconferencing Studios of UA

The UA currently has three videoconferencing systems, two of them located in the Rectory Central Building (Academic Acts Room and Room of translations) and another in CEMED.

1. Studio Room of Academic Acts Rectory

Polycom/VS4000 Release 6.05 FX

GDS: 00351400103311 - 193.136.252.132 Codec H.323

The first system installed in the control room of the auditorium Room of Academic Acts Rectory, was acquired through the International Competitive Tender n.º 9 ST/2001. The company Proaudio Sistemas Profissionais Audio delivered a videoconferencing codec VS4000 of Polycom in October 2002, and the remainder audiovisual system in February 2003. Despite the tender specifications related to the system specify the use of ISDN/ISDN lines until speeds up to 384 Kb/s or over IP up to 1 MB/s, the system has never been configured by the company, which claimed the unavailability of ISDN/ISDN accesses. However the UA owned IP networks with adequate capacity and nothing was done. In this way, the equipment, though energized, remained for four years without use until October 2006 when it was tested, configured and had its firmware upgraded to Release 6.05 FX.

2. Studio Room of Translations Rectory / FCCN

Aethra/AVC8400

GDS: 00351400103212 - 193.136.252.129 Codec H.323 Aethra AVC8400

The second system, installed in the Room of Translations Rectory, based on the videoconferencing codec AVC8400 Aethra was delivered in lending through the initiative Studios project of FCCN, funded by POSI, with the aim to motivate and promote the investigation of techniques and technologies related to videoconferencing. In this sense, the University of Aveiro and FCCN signed in October 2004 a protocol aimed at equipping the UA with a videoconferencing studio. The Studios project was reported completed in March 2006 having given rise to the Network Studios.

3. Studio CEMED

Polycom/V500 IP

GDS: 00351400103312

193.136.252.133 Codec H.323

The third system, installed on CEMED, was purchased with funds from the Calouste

Gulbenkian Foundation (FCG) in December 2006, based on the videoconferencing codec V500 IP of Polycom. Its installation is due to the need for greater experimentation (one of the objectives of the project studios) hampered due to the shared use of Room of Translations for other purposes, together with its physical location (central relative to the UA campus, but far from CEMED) and need to support the Masters in Multimedia in Education and Teaching Language being developed by the University of Aveiro in the Institute of Education (ISE) of Cape Verde.

Addressing IP scheme of UA (2007):

193.136.252.128	Network
193.136.252.129	Codec H.323 Aethra AVC8400
193.136.252.130	PC
193.136.252.131	Control System
193.136.252.132	Codec H.323 Polycom VS4000
193.136.252.133	Codec H.323 Polycom V500 IP
193.136.252.134	Gateway
193.136.252.135	Broadcast

Updating the ADSL of Cape Verde

The last bandwidth upgrades in Cape Verde occurred in May 11, 2007, with the update of the existing line. Later in May 24, 2007, two more lines were installed. The current configuration (June 2007) was 2 Gbps of downstream, keeping the same 128 kbps of upstream. This data at the same time that reveals the limitations of CVTelecom in offering a product to market with upstream greater than 128 kbps shows that the upgrade to a 2048 kbps ADSL is not justified because it kept the same maximum speed (not guaranteed) of 128 kbps upstream.

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Learning English Writing via A Web Digital Platform: A Case of Taiwanese Aboriginal Nursing Students' Participation and Learning Outcomes

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ABSTRACT

This paper reports on a research study that examined the learning experience of the minority students in a predominantly social networking, web digital platform and its impact on their learning outcomes. Participants were 162 aboriginal students aged between 18 and 23 at a nursing college in southern Taiwan. Learners were asked to take compulsory English language courses and expected to pass an English Proficiency Test as an exit requirement of the university. Writing skill is a crucial element in determining the success of the test takers. Results revealed that the participants' perceptions and learning outcome to be significantly related to the chosen instructional pedagogy. This study made theoretical, methodological, as well as contextual contributions to the field of online learning and provided several teaching implications for teaching English writing using web-based technologies. It also seeks to help researchers and educators find meaningful ways that will improve the attitudes of aboriginal students in the learning environment, and continue to evaluate ways to help these students connect with the process of learning.

Keywords: Computer mediated language learning, English for academic purposes, Cultural Diversity

INTRODUCTION

Research studies on instructional technologies have been increasingly catalyzed by social and constructive perspectives on learning. When learners are placed in an environment designed based on the social constructivist theories in order to facilitate meaningful learning, collaborations and interactions between the learners occur (Lohnes & Kinzer, 2007; Salaway, Caruso & Nelson, 2007). It is then knowledge is constructed, and experiences and skills shared. The outburst of web based technology mediated learning seems to be able to stimulate learning process and produce persuasive learning outcomes (Lee & Woods, 2010). As McCarthy (2010) suggested that the widely used web 2.0 (or above) technologies have not reached their fullest potential in tertiary education, some have argued that these technologies may not always be successful or adequate tools to facilitate formal learning or learning activities (Waycott, Bennett, Kennedy, Dalgarno & Gray, 2010) In addition, some researchers have become increasingly worrisome when many do not consider the different ethnicity and cultures of students and the impact that these factors have on students' learning style and level of confidence. Literature and instructors have also failed to examine closely the potential negative effects that technology mediated learning has on students, and the ethnic and cultural aspects that may contribute to students' preference of technology mediated learning, especially the minority students. As Huang (2002) noted, "technology mediated learning could be in conflict with individual differences" (p. 32). When (web-) technologies are required to facilitate teaching/learning, the instructor may experience difficulties in taking into account individual learning preferences and capabilities (Westera, 1999).

To emphasize the importance of English as a communicative language and pursuit the goal of lifetime learning, college students in Taiwan are asked to take compulsory English courses as an integral part of the general education core curriculum (GECC). They also have to pass an English language proficiency test to meet an exit requirement maintained by the university. The most common test taken by the students is the General English Proficiency Test (GEPT) which assesses learners' listening, reading, speaking, and writing skills.

Among the four language skills, writing has been regarded by the students as one of the most difficult areas to improve on, trailed by speaking, listening, and reading, respectively. Fast growing internet technologies have been considered in order to facilitate the needs of language teaching and learning. From electronic mails, bbs, blogs, online discussion boards, e-portfolios to Flickr®, LinkedIn® , Twitter®, Facebook®, these technologies have given the consumers of the cyberspace opportunities to interact and communicate in ways they would have never thought possible years ago. These newly developed internet applications, also known as the "Web technologies," allow meaningful interactions and collaborations with each other in the virtual community through social media (McCarthy, 2010). As stated by Warschauer (1996), direct, instant and inexpensive web applications conveniently motivate students intrinsically, enable the learners to exercise reasonable control over their learning, providing them with authentic materials and allow the users to interact and communicate with real people in a cohesive way (Arslan & Sahin-Kizil, 2010). A web based learning environment is one that facilitates a learner centered approach that provides the learners opportunities to exchange knowledge and practice skills.

Issues such as how technology fits into the socialcultural framework of how people learn are seldom raised (Grasha & Yangarber-Hicks, 2000, as cited in Palma-Rivas, 2000). Even though much has been written about student diversity and technology mediated learning and/or e-learning, these two dimensions have been pursued separately (Palma-Rivas, 2000) and not many writers have attempted to piece them together. Therefore, a research study that carefully and respectfully examines the experiences of the minority students in the web technology mediated learning environments deserves serious review.

REVIEW OF LITERATURE

Computer Mediated Language Learning

Computer-based language learning can be traced back to the 1970s, when a number of language teachers used computers as mechanical or language trainers to enhance students' grammar and lexical skills (Warschauer & Healey, 1998). For example, after a lesson has been taught in a writing class, language instructors might ask students to review and reinforce the knowledge they have learned in class and practice a certain rule of grammar or sentence structures of the target language alone or with their peers by using computers or other technology devices. Zha et al. (2006) examined English learners' communicative competence in a computer-mediated language learning environment. They used both qualitative and quantitative statistical methods to analyze messages posted electronic discussion by the students. The results of this study suggested that electronic discussion boards can be used to promote language learners' writing skill as well as the target language usage. Warschauer (1996) concluded that "electronic discussion can be a good environment for fostering use of more formal and complex language, both lexically and syntactically" (p. 22).

By using language learning software as the "supplementary source", students were able to practice lessons as frequently as needed. Kang (1995) conducted a study on the effectiveness of different instructional approaches on students' English vocabulary learning. The results indicated that students performed significantly higher in a retention test when using a computer-based context instructional approach and concluded that a computer-mediated learning environment would enhance learners' vocabulary learning.

As technology becomes more advanced, many language instructors are now incorporating language lessons with multiple media into their classrooms. Yu, Williams, Lin, & Yu (2007) revealed that "the potential of multimedia is to foster the level of interactivity as a form of learning and to offer many possibilities for enriching the knowledge" (p.219). As Teririll (2000) stated "[English as a second or other language] ESOL teachers and learners across the country are integrating computers, Internet and multiple media with ESOL instruction. The world has changed because of the Internet [and other electronic devices] and ESOL has changed with it" (p. 2). Using computers and multimedia, such as Internet, web page and streaming audio, with a web-based instruction, provide a learning environment that facilitates positive interdependence and collaborative team work for students (Lee, 2000). The World Wide Web (WWW) and electronic mail (e-mail) communication media also have a tremendous impact on enhancing students' language competency. In 1996, Rosen conducted a study on how students used computers with Internet access as the language learning medium to improve their English language proficiency. The result indicated that students using the Internet as a primary tool in learning English scored slightly higher on the test compared to students using the direct instruction method in learning English. Wang (1996) investigated the effectiveness of using e-mail as a writing tool for dialogue journaling. His findings indicated that students in the e-mail group generated more language functions in each writing session than

students in the paper-and-pencil group and concluded that using e-mail as a language learning tool facilitates language learning. Thus, to achieve the literacy of a second language, using technology in learning a language would be an important component for language learners. Internet and multimedia would be the tools to support their linguistic skill and knowledge structure (Kasper, 2002).

Cultural Sensitivity & Technology Learning

Culture is defined as "the beliefs, value systems, norms, mores, myths, and structural elements of a given organization, tribe, or society" (Watson, Ho & Raman, 1994). Individuals and groups carry the culture which manifests itself in how a group interprets and reacts to its environment (Collis 1999). The individual and organizational behavior is "affected by the values and attitudes that they hold and the societal norms that surround them. Culture as an affecting factor of the acceptance, use, and impact of online learning systems appears at different levels" (Collis, 1999). In a group, culture is the group norms, values, and attitudes. The instructors and learners who carry the culture of group norms are influenced by society. Group norms are the personal characteristics, attitudes towards information technology and computer-mediated communication, and preferred learning style. The discipline/domain is the differences in acceptance of computer-mediated communication within courses.

Little research has been conducted to detect the advantages and disadvantages of how race, gender, and ethnicity contribute to the preferred learning styles of students in an web based collaborative learning environment. Most of the research tends to focus on students as a whole or personality types, neglecting cultural and ethnic backgrounds and norms that are preferred among different groups of students. Race and ethnicity must be considered when probing into the importance of online collaborative learning environments. Du & Anderson (2006) looked at barriers that students face while learning takes place in online environments. They found that online courses are known for writing and communication, two weaker areas for minority students.

According to Witkin, Moore, Goodenough, and Cox (1977), students develop their preferred learning styles early in life. Thus, if they enter a learning environment that focuses on a style different from their own, they tend to refuse the learning environment. Hayes and Allinson (1997) found that about 60% of the time, students who continue in the negative environment will perform at a lower level. Existing experimental studies that address the general issue of the mismatch between learning preference and the instructional situation have also helped the exploration of minority students' responses to online or web based collaborative learning. According to Witkin, Moore, Goodenough, and Cox (1977), post-secondary students enter a learning situation with their learning preferences already developed. If they meet a learning environment at variance with that preference, it is likely the student will reject the learning environment.

Surely learning preferences are not the sole variable in making a learning environment engaging (Curry, 1983, 1990). However, some merits certainly should be placed on the validity of the learners' personal experiences. Knowing more about the experiences of those who may feel that their learning preference is out of synch with the dominant pedagogical tool of collaborative online learning is an important addition to the literature and a necessary preparation to a learner-centered, web based learning environment design. An examination of minority students' learning experiences in social networking, web collaborative environment will further illuminate the cultural dimensions affecting learning preference and outcome.

THE STUDY

This study was guided by the following research questions:

1. What were the aboriginal students' overall perceptions about learning English writing using a social networking, web digital platform?

2. How did learning predominantly using a social networking, web digital platform affect learners' perceptions and learning outcomes?

Research Framework

This study was designed to be a phenomenological examination of Taiwanese aboriginal students in a newly established social networking environment and followed a circular pattern to conduct English writing training for the target learners as illustrated in Figure 1 below. In alignment with a phenomenological approach, the study emphasized on the experiences of aboriginal students in the designated learning environment and not on a comparative examination of their experiences in contrast to those of other learners.
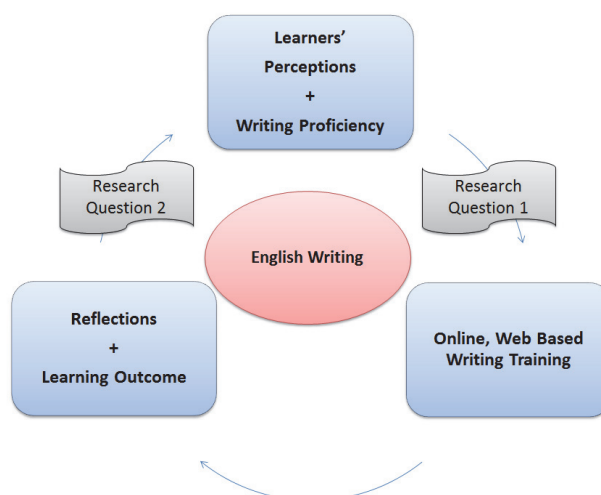

Figure 1. Circular Pattern of Learning English Writing in A Social Networking Environment

METHODOLOGY

Population & Participants

The accessible population for the study was 250 aboriginal nursing students enrolled in a regional campus of a nursing university in southern Taiwan in fall semester, 2013. Among which, 162 students agreed to participate, accounting for 65% of the population.

The participants aged between 18 and 23, averaging 21 years of age. They varied in their educational experience prior to entering the university, experience of using computers for language learning, and were at different stages of their degree, as far as their class rank was concerned. Despite their varying backgrounds, most of the participants had never learned formal English writing due to the fact that it was not part of their curriculum. The researchers could also be fairly certain that the target students never learned English writing using a predominant web digital platform. Thus they were considered as the novice learners before training activities commenced.

The English instructor was a full-time faculty at the university, who had accumulated over 5 years of teaching experience in the universities. He specialized in teaching English writing, and had been taking all steps necessary to help the learners pass the GEPT test. He was the sole person to give writing instructions and provided feedback to ensure uniformity and consistency.

Teaching context

In connections to English writing instruction, the social networking site, Facebook, acted as a teaching/learning platform outside the language classroom. This platform recorded all writing processes, collected learners' writing works plus the teacher's teaching materials, and shared writing information with all the participants in the same class. Student writers were able to observe their peers' writing freely. Prior to the

submission of their first written work, students were provided with instructional materials, covering several key elements of successful writing from sentence to paragraph level. The instructor then stressed the importance of English grammar with emphases on the parts of speech and sentence structures. Furthermore, students were reminded of the common writing mistakes made by the foreign language learners, for instance, singulars & plurals, articles, prepositions, auxiliary verbs and etc., as observed by the previous researchers (Bitchener, Young & Cameron, 2005; Rozovskaya & Roth, 2010). A total of four writing cycles (see Figure 2) were exercised including two compositions before the midterm examination and the remaining two thereafter. Each round of the writing took three weeks in order to allow sufficient turnaround time for edits and feedback. Throughout the writing process, students were asked to strictly adhere to the rule that they needed to do their own work and the use any translation service or software was not encouraged. Moreover, weekly group chatrooms were hosted for two purposes: first was to serve as a reinforcement to resolve any questions students might have during the processes of writing. Secondly, one or more better works were selected by the instructor to demonstrate and discuss points of a good writing.

Every writing topic had its distinct teaching points on genres and grammatical features. These four topics were adopted from the mock GEPT tests so their proficiency level was consistent in terms of their validity and reliability.

This teaching context adopted, which as stated by Hyland (2002), an approach that views writing as thinking and as discovery. A process writing approach involves a number of activities, including setting goals, generating ideas, organising information, selecting appropriate language, then followed by making a draft, reading and reviewing, and finishing by final revision and edit (Grabe & Kaplan, 1996; Richards, Platt, & Platt, 1992).
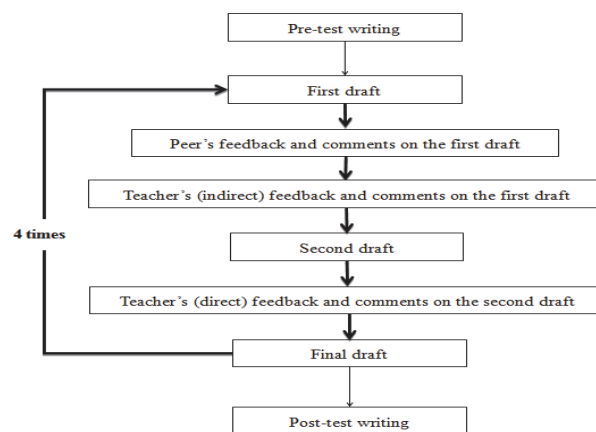

Figure 2. Writing Cycles

Both direct and indirect feedback on learner's writing errors were implemented. Direct correction, also known the mechanical error correction strategy, involves the underlining, highlighting, and giving explicit answers to the incorrect words, sentences, or violations of the general grammar rules made by the instructor. On the other hand, indirect correction, as known as meaning error correction strategy, refers to more implicit hint such as placing a question mark, inserting an arrow, or underlining places with errors/mistakes without giving the answers immediately (Hendrickson, 1978).

In this study, the learning goal was to equip students with the ability to write a short composition which confers to the standards set by the GEPT. Each learner was asked to complete 2 versions of compositions - initial draft and subsequent draft, before they submitted the final copy for evaluation. This is a strategy called the multiple-revision that is also a feature usually accompanies the process writing approach. As Figure 2 indicates, each learner received feedbacks both from their peers and the teacher himself. The instructor gave indirect comments on the first draft, and the students will make revisions and submit the second drafts. Direct feedback was provided on students' second drafts so the learners could modify their works before the submission of their final drafts (Hendrickson, 1978).

Data collection instruments

Perceptions of Online Writing Instruction/Learning

A self-reported questionnaire, containing 13 five-point Likert scale items was distributed to investigate the learners' perceptions about the effectiveness of online, web based writing instruction (see Figure 3 below). This instrument was developed by the researchers based on information obtained from the review of literature in the areas of computer facilitated English writing and computer mediated language learning. It was made available monolinqually in Mandarin Chinese in order to avoid receiving any false response due to misinterpretations of the item(s). The participants responded the questionnaire twice, once before and the other after the training. The two questionnaires were identical in terms of their content and number of questions.

No.	Items	SD	D	N	A	SA
1	I think the online English writing instruction (using a social networking, web digital platform) can fully replace the conventional face-to-face instruction.	1	2	3	4	5
2	I think that I am more motivated to learn English writing using a social networking, web digital platform.	1	2	3	4	5
3	I think I can be more satisfied with this course arrangement and the designated teaching method.	1	2	3	4	5
4	I think learning by using a social network, web digital platform enables me to be an active learner.	1	2	3	4	5
5	I think the features of a social networking, web digital platform stimulates my learning interest.	1	2	3	4	5
6	I think my interaction with the peer students is greater in a social networking, web digital platform.	1	2	3	4	5
7	I think I can achieve more when learning via a social networking, web digital platform.	1	2	3	4	5
8	With the help of computer, I think I can develop more necessary English writing skills required by my future work	1	2	3	4	5
9	I think I am more confident to write English compositions in a social networking, web digital platform.	1	2	3	4	5
10	I think I am more at ease to write English compositions in a social networking, web digital platform.	1	2	3	4	5
11	I think providing and receiving peer feedback on a social networking, web digital platform is more effective than in other formats.	1	2	3	4	5
12	I think my attitude toward learning the given subject is more serious on a social networking, web digital platform.	1	2	3	4	5
13	I think a social networking, web digital platform encourages learning through collaboration.	1	2	3	4	5

Figure 3. Perception Survey of Online English Writing Instruction/Learning

Writing Performance Grading Rubric

The Scale for Rating Composition Tasks developed by CEEC (College Entrance Examination Centre) was utilized to evaluate the learners' writing outcomes from more dimensions than just a holistic score (see Figure 4 below). It included five equally weighted criteria: (1) organisation; (2) content; (3) grammar; (4) diction (vocabulary and spelling); and (5) mechanics (Chou, 2009). The organization refers to the introduction part such as the draft of topical sentence(s), the main body - developing sentences, and conclusion, especially the adequacy of writing concluding sentence(s). The content section evaluates writers' logical development of his/ her ideas; and the grammar criterion sees whether the students can handle the grammatical rules, for example, tense or parts of speech successfully. The fourth (diction) part assesses learners' competence in managing mechanics, for instance, punctuation, words spelling and so on; and the style examines the writing genres, styles, and quality of

expressions. These two writing papers were all evaluated by the same writing assessor, who was an experienced language teacher familiarized with the GEPT requirements and learners' characteristics in this teaching context, before and after the semester.

ITEM	SCORE	CRITERIA	LEVEL
CONTENT	5	relevant to topic; complete development of thesis	Excellent
	3-4	mostly relevant to topic; incomplete development of thesis	Good
	1-2	slightly relevant to topic; inadequate development of thesis	Fair
	0	irrelevant to topic; no words on the paper	Poor
ORGANIZATION	5	well-organized; logical sequence; cohesive	Excellent
	3-4	loosely-organized; incomplete sequence;	Good
	1-2	disconnected; lack logical sequence	Fair
	0	no organization in the whole essay	Poor
GRAMMAR	5	fewer errors of agreement, tense, number, preposition	Excellent
	3-4	several errors of agreement, tense, number, preposition	Good
	1-2	frequent errors of agreement, tense, number, preposition	Fair
	0	severe errors of agreement, tense, number, preposition	Poor
DICTION	5	effective word/idiom choice, usage	Excellent
	3-4	occasional errors of word/idiom choice, usage	Good
	1-2	frequent errors of word/idiom choice, usage	Fair
	0	no other word except for the title written	Poor
MECHANICS	5	no or fewer errors of spelling, punctuation, capitalization	Excellent
	3-4	occasional errors of spelling, punctuation, capitalization	Good
	1-2	frequent errors of spelling, punctuation, capitalization	Fair
	0	severe errors of spelling, punctuation, capitalization	Poor
Total Points			

*Scale for Rating Composition Tasks (Adapted from CEEC, 1994)

Figure 4. CEEC Writing Performance Grading Rubric

Validity and Reliability of the Instrument

In order to establish the content (face) validity of the instrument, the researchers presented it to a panel of experts. This three-member panel of experts consisted of professors from the Departments of Nursing, Applied Foreign Language and Center for General Education. They were asked to validate the content of the survey instrument as well as the interview protocols by ensuring the overall inclusiveness of all the variables under investigation and to verify that it addressed the research questions. The experts were also asked to review the survey for things such as unclear instructions, confusing, ambiguous or repetitive items, and overly complex or difficult sentence structure. The researcher revised the instrument based on the constructive feedback received from the reviewers.

To establish the reliability of the survey instrument used, the researcher employed a test/ retest method using 15 students who agreed to participate. This same group of students was not included as part of the study. The same survey was completed by the same participants twice. There was a waiting window of approximately one week between the first and second administration of the instrument. The researcher performed a correlation test to determine the correlation coefficient between the two test administrations, thus identifying the correlation

coefficient, r, and the reliability of the instrument, resulting a Cronbach's alpha value of .83.

Data Collection and Procedures

All aboriginal students enrolling in fall semester 2013 were contacted via phone or e-mail to ask for their participation in the study. The researchers then set up initial face-to-face meetings in a computer lab with interested individuals in which the administration of the questionnaire and a writing (pre-) test took place. The participants were asked to type their essays on the computer. Students were informed that they could withdraw from the study at any time and that their participation would in no way influence their academic standing in school. Voluntary participation was ensured both through explicit verbal and written explanations. Students read the informed consent letter prior to completing the questionnaire and retained a copy of the letter for their records. The researchers interacted with the students up to two times during the course of the study. The initial interaction was on the day that the survey and pre-test were conducted. The second and last interaction occurred at the end of the term, during which time the identical survey and the other writing (post-) test were administered.

FINDINGS

The researchers used a five-point Likert scale to collect participants' responses for statements in the with number 1 being Strongly Disagree (SD) , number 2 being Disagree (D), number 3 being Neutral (N), number 4 being Agree (A), and number 5 being Strongly Agree (SA).

In this study, the means for Likert scale items were interpreted using the scale shown in Table 1.

Table 1. Interpretation of Likert scale mean score values

Interpretation of Mean Score Values	
Scale	Description
1.00-1.49	Strongly Disagree
1.50-2.49	Disagree
2.50-3.49	Neutral
3.50-4.49	Agree
4.50-5.00	Strongly Agree

Demographic Statistics

This study called for completely voluntary participation. In sum, among 162 participants, 152 were female students and 10 were male students. All were full-time undergraduate students majoring in Nursing and aged between 18 and 23. As far their classification was concerned, forty three were freshmen, ten were sophomore, fifty were juniors, twenty six were seniors and the remaining thirty three were continuing education students. Figure 5 illustrates the tribal representation of the participants.
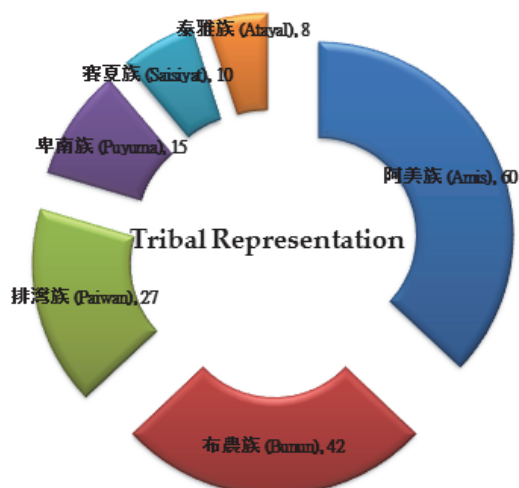
Figure 5. Tribal Representation

Research Question 1

First research question provided a basis of knowing the learners' initially overall perceptions and preferences about learning English writing in an online social networking environment.

Table 2 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on ethnicity. The mean scores ranged from a low of 3.43, to a high of 4.36, indicating the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective.

Table 2. Learning English writing on a web-based digital platform based on ethnicity

Ethnicity/ Tribe	N	Mean	SD	Sn	Min	Max
Bunun	42	3.59	.47	.48	3.00	4.00
Amis	60	3.43	.77	.74	2.58	4.3
Puyuma	15	3.54	-	.4	3.54	3.5
Paiwan	27	4.36	.46	.42	3.95	4.8
Saisiyat	10	4.31	-	.1	4.31	4.3
Atayal	8	3.85	-	.5	3.85	3.8

Table 3 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on class rank. The mean scores ranged from a low of 2.77, to a high of 4.31, indicating the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective.

Table 3. Learning English writing on a web-based digital platform based on class rank

Class Rank	N	Mean	SD	Min	Max
Freshman	43	3.79	.55	3.08	4.38
Sophomore	10	2.77	.69	2.17	3.7
Junior	50	3.54	.64	3.54	3.5
Senior	26	4.31	.38	3.99	4.51
Cont'd Education	33	4.11	.72	3.92	4.31

Table 4 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on grade point average (GPA). The mean scores ranged from a low of 3.33, to a high of 4.31, indicating the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective.

Table 4. Learning English writing on a web-based digital platform based on GPA

GPA	N	Mean	SD	Min	Max
A (80 and up)	80	4.05	.55	3.08	4.85
B (70 ~ 79)	68	3.33	.55	2.54	3.92
C (60 ~ 69)	14	4.31	.49	4.20	4.50

Table 5 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on the years of using the computer in English learning. The mean scores ranged from a low of 3.68, to a high of 4.85, indicating the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective.

Table 5. Learning English writing on a web-based digital platform based on experience of using computer in *English learning*

Comp_Eng_Learn	N	Mean	SD	Min	Max
0 ~ 5 years	158	3.68	.58	2.54	4.38
6 ~ 10 years	4	4.75	.40	4.65	4.85

Research Question 2

Research Question 2 investigated examined the possible impact that the chosen technique had on learners' learning outcome and perceptions. Table 6 shows the scale, adopted from Du, Ke & Olinzock (2008), for the purpose of interpretation of the correlation coefficients, r.

Table 6. Interpretation of correlation coefficients

Correlation Value	Description
.80 – 1.00	Very Strong Association
.60 – .79	Strong Association
.40 – .59	Moderate Association
.20 – .39	Low Association
.00 – .19	Very Low Association

Table 7 shows the paired samples test between the pretest and posttest scores of students' perceptions of learning English writing on a social networking, web based digital platform ($r = .36$, p. $< .05$). The result revealed that overall there was a statistical significant, *low* positive association between the two variables. More significantly, No. 3 "I think I can be more satisfied with this course arrangement and the designated teaching method" & No. 12 "I think my attitude toward learning the given subject is more serious on a social networking, web digital platform" resulted in $r = .52$ & $r = .56$, p. $< .05$, respectively, indicating a statistical significant, *moderate* positive association between the two variables.

Table 7. Paired samples test of students' perceptions of learning English writing on a social networking, web based digital platform (pretest & posttest)

Variables	Perceived Effectiveness (Pretest)
Perceived Effectiveness (Posttest)	.36*

* Correlation is significant at the .05 level (2-tailed).

Table 8 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on Ethnicity. Pretest scores are also provided for comparison purposes. The (post) mean scores ranged from a low of 3.23, to a high of 4.08, indicating overall the participants in the study held "neutral" view to "agreed" that such learning mechanism was effective at the completion of the course. However, it was further noted that the mean scores of only two tribes, Amis and Atayal, showed increases whereas the scores of the remaining students decreased slightly.

Table 8. Perception changes based on ethnicity

Ethnicity/Tribe	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Bunun	3.46	3.59	.202	3.23	3.62
Amis	3.82	3.43	.650	2.92	4.46

	N	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Puyuma	5	3.23	3.54	.99	3.20	3.30
Paiwan	7	3.85	4.36	1.03	3.00	5.00
Saisiyat	0	3.69	4.31	.81	3.19	4.69
Atayal	0	4.08	3.85	.42	3.88	4.28

Table 9 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on class rank. Once again, pretest scores are also provided for comparison purposes. The (post) mean scores ranged from a low of 2.92, to a high of 3.98, indicating overall the participants in the study held "neutral" view to "strongly agreed" that such learning mechanism was effective at the completion of the course. However, it was noted that only "Sophomore" and "Cont'd Education" two class ranks saw slight increase in the means scores whereas the scores of the remaining class ranks (Freshman, Junior & Senior) decreased.

Table 9. Perception changes based on class rank

Class Rank	N	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
Freshman	3	3.67	3.79	.45	3.23	4.31
Sophomore	0	2.92	2.77	.65	2.72	3.22
Junior	0	3.23	3.54	.52	3.03	3.41
Senior	6	3.54	4.31	.87	3.04	4.54
Cont'd Education	3	3.98	3.46	.45	3.38	4.46

Table 10 shows the descriptive statistics of the participants' perceptions of learning English writing on a social networking, web based digital platform based on students' GPA. The (post) mean scores ranged from a low of 3.53, to a high of 3.88, indicating overall the participants in the study "agreed" that such learning mechanism was effective at the completion of the course. However, only mean score of "B" GPA saw slightly increased while that of "A" and "C" GPA decreased.

Table 10. Perception changes based on GPA

GPA	Mean (Posttest)	Mean (Pretest)	SD	Min	Max
A (80 and up)	3.88	4.05	.	3.	5.

	0				62	23		00	
B (70 ~ 79)	8	3.53	3.33		. 60	2. 92		4. 46	
C (60 ~ 69)	4	3.69	4.31		. 55	3. 29		4. 09	

Composition Task Score

Students were required to submit a copy of their written work at the commencement and the completion of the study. Both works were graded using the same scoring rubric illustrated in Figure 4.

Table 11 shows the paired samples test between the pretest and posttest writing scores on a social networking, web based digital platform ($r = .70$, p. $< .05$). The result revealed that overall there was a statistical significant, *strong* positive association between the two variables. Table 12 shows the paired samples test between the pretest and posttest composition scores on a social networking, web based digital platform, broken down in five categories. The result revealed that overall there was a statistical significant, *very strong* ($r = .91$, p. $< .05$) positive association between pretest and posttest writing in term of content, *strong* positive associations in organization, dictation and mechanics, ($r = .62, .65,$ and $.60$ respectively, p. $< .05$) and *moderate* ($r = .45$, p. $< .05$) association in grammar.

Table 11. Paired samples correlations of students' pretest and pretest writing scores

Variables	Pretest Writing Scores
Posttest Writing Scores	.70*

* Correlation is significant at the .05 level (2-tailed).

Table 12. Samples correlations between pretest and posttest scores

Pretest & Posttest	Category	Coefficient Value	Relationship
Pair 1	Content	.91	Very Strong Association
Pair 2	Organization	.62	Strong Association
Pair 3	Grammar	.45	Moderate Association
Pair 4	Dictation	.65	Strong Association
Pair 5	Mechanics	.60	Strong Association

Learning outcomes

Occurrences of Comma Splice (CS) vs. Ethnicity

Sphericity test indicated homogeneity of variance assumption for the two variables was not violated with *p.* > .05. As illustrated in Table 13, a repeated measure test was used to examine if there were significant differences of the occurrences of comma splice in participants' writings based on their ethnicity. The results indicated that there was a significant difference among groups $F(1, 160) = 8.73$, *p.* < .05.

Table 13. Repeated measure test of the occurrences of comma splice on ethnicity

Perception	Sum of Squares	df	Mean Square	F	p
Between Groups	19.13	1	19.13	8.73	.02*
Within Groups	9.90	160	1.98		

Occurrences of Comma Splice (CS) vs. Class Rank

Sphericity test indicated homogeneity of variance assumption for the two variables was not violated with *p.* > .05. As illustrated in Table 14, the results of the repeated measure test indicated that there was a significant difference among groups $F(1, 160) = 7.35$, *p.* < .05.

Table 14. Repeated measure test of the occurrences of comma splice on class rank

Perception	Sum of Squares	df	Mean Square	F	p
Between Groups	22.05	1	22.05	7.35	.03*
Within Groups	6.43	160	1.98		

Subject-Verb Agreement (SVA) vs. Class Rank

Sphericity test of the homogeneity of variance assumption for the subject-verb agreement in participants' writing on a social networking, web based digital platform based on students' class rank. The test score indicated that the assumption was not violated with *p.* > .05.

As illustrated in Table 15, a repeated measure test was used to examine if there were significant differences of the subject-verb agreement in participants' writings based on their class rank. The results indicated that there was a significant difference among groups $F(1, 160) = 18.06$, *p.* < .05.

Table 15. Repeated measure test of subject-verb agreement (SVA) on class rank

Perception	Sum of Squares	df	Mean Square	F	p

	Sum of Squares	df	Mean Square	F	p
Between Groups	177.01	1	177.01	18.06	.01*
Within Groups	36.37	160	6.06		

Verb Tense vs. Grade Point Average (GPA)

Sphericity test of the homogeneity of variance assumption for the verb tense in participants' writing on a social networking, web based digital platform based on students' GPA. The test score indicated that the assumption was not violated with *p.* > .05.

As illustrated in Table 16, a repeated measure test was used to examine if there were significant differences of the verb tense in participants' writings based on their GPA. The results indicated that there was a significant difference among groups $F(1, 160) = 34.43$, *p.* < .05.

Table 16. Repeated measure test of verb tense on GPA

Perception	Sum of Squares	df	Mean Square	F	p
Between Groups	96.65	1	96.65	34.43	.01*
Within Groups	3.50	160	1.75		

This study sought to investigate the impact of teaching/learning via a web-based social networking platform on aboriginal nursing students' perceptions and learning outcome. The independent variables examined in the study predicted a portion of the variance of participants' perceptions of the effectiveness of learning English writing on the Facebook, a social networking platform. Based on the correlational and regressional analyses, several notable findings have been highlighted in the table 17 below, followed by detailed interpretations:

Table 17. Highlighted findings

o.	Variable 1	Variable 2	Way of Analysis	Relationship
	Pretest Writing Score	Posttest Writing Score	Correlation	*Strong Positive*
	Comma Splice Occurrences	Ethnicity	Repeated Measure	*Statistical Significant*
	Comma Splice Occurrences	Class Rank		
	Subject-Verb Agreement	Class Rank		
	Verb Tense	GPA		

Interpretations

Basing on the highlighted findings in Table 18, the following interpretations are given:

Finding 1 – This study adds to the literature that there was a *strong positive* relationship between students' pretest writing scores versus their posttest scores. A follow-up examination of the writing performance grading rubric revealed the highest coefficient value, .91 (very strong association), in the "Content" dimension indicating that the "indirect-" or "meaning-" error correction strategy contributed much more positively in students' writing performance. On the other hand, a comparatively lower coefficient value, .45 (moderate association), was noted in the "Grammar" category, indicating that the "direct-" or "mechanical-" error correction strategy was less contributive than the other dimensions (i.e. content, organization, dictation, etc.). This finding supported the similar claims made by Berg in 1999, Liu & Hansen in 2002, and Xiao & Lucking in 2008.

Findings 2 & 3 – This study also adds to the literature that there was a statistically significant difference $F (1, 160) = 8.73$, $p. < .05$ by Repeated Measures, between the "occurrences of comma splice in participants' compositions" and "ethnicity." When two independent clauses are connected by *only* a comma, they constitute a run-on sentence that is called a comma-splice. An example of a run-on sentence is as follows: "It is cold outside, put on some clothes." (missing conjunction). A follow up test revealed that Paiwan students were significantly different (M = 4.01), from Bunun students (M = 3.50). Students from Bunun tribe tended to commit more Comma Splice grammatical errors than the Paiwan students. Another statistical significance was observed $F (1, 160) = 7.35$, $p. < .05.$, between "comma splice occurrences" and "class rank." The follow up test disclosed that Junior rank students (M= 3.20) were significantly different from cont'd education students (M=3.8) in that the later seemingly committed less grammatical errors than the former.

Finding 4 – Subject-verb (S-V) agreement (i.e. We <u>drive</u> to school every day (√). vs. Mary <u>go</u> to school by bus every day.(X) Mary goes to school by busy every day (√)) is one of the most commonly made grammar errors among students who learn English as a foreign language (EFL). Freshman students (M=3.60) were significant different from Junior students (M=3.10) as noted by Repeated measures, $F (1, 160) = 18.06$, $p. < .05$, in that freshmen made less S-V agreement errors than did the juniors. This finding is in contrast to the previous studies (Brooks & Grundy, 1990; Horwitz, 1986; Hyland, 2002) which suggested that students of higher classification (i.e. senior/junior) were less liable to commit such errors. One of the possible explanations might have been that students in their freshman or sophomore year still benefited from high school's intensive English training in preparation of the college entrance exam. Under which, greater emphases were placed in the mechanical aspects of the target language.

Finding 5 – Even paradoxically, "Verb tense" (i.e. present, past & future tenses) is not usually perceived as being difficult to teach/learn, EFL students often express that it is a one of the difficult grammatical areas to master (Larsen-Freeman, Kuehn & Haccius, 2002). Once again, taking "Mary goes to school by bus" for an example, while in English, present tense is often used to refer to actions that are habitual, repeated, or always true (Mary takes the bus to school everyday), it in most languages refers to actions that are taking place in the present. If the latter is true, English uses progressive (Mary is going to school by bus) to express actions that are taking place in the present time. This finding affirmed Bitchener, Young & Cameron's claim in 2005, adding that there was a statistically significant difference $F (1, 160) = 34.43$, $p. < .05$ by Repeated Measures, between "verb tense" and "GPA." A follow-up test revealed that students with higher GPA (A average, M=3.90) formed less "verb tense" errors than students with lower GPA (B average, M=3.30).

CONCLUSIONS

This study made theoretical, methodological, and contextual contributions to the field. As far the theoretical development is concerned, even though much has been written about student diversity and technology mediated learning and/or e-learning, these two dimensions have been pursued separately (Palma-Rivas, 2000). There is insufficient literature that examined them together. Thus, this research can expanded the theoretical horizons of the effects of minority (aboriginal) student's learning styles and cultural experience on technology mediated teaching and learning.

Methodologically, this study contributes to the current learning theories based on social constructivism. As a social-constructivist approach to manage a English language classroom, the use of a web digital learning platform helps answer questions about the social cultural implications of instructional technologies and how technology as a whole fits into a conceptual framework of principles into a broader philosophy of teaching and learning (Grasha & Yangarber-Hicks, 2000, cited in Palma-Rivas, 2000).

Contextually, this study extends the research of technology facilitated learning to language teaching and learning, specifically in the development of writing skills. In the educational context in Taiwan, even though research studies have been conducted in related subject areas, there is an absence in the literature examining minority (aboriginal) students and web based language teaching and learning in conjunction. This study explores aboriginal students' perceptions and learning effectiveness in English writing, using a social networking, web digital platform. Most importantly, it looks far and beyond to provide substantial explanations in the extent to which if any significant differences found are the results of some unforeseen issues (eg. ethnic, racial and/or cultural). Lastly, it will prompt for more culturally sensitive technology-mediated instructional designs in the overall teaching context in Taiwan.

IMPLICATION FOR TEACHING ENGLISH WRITING USING A WEB-BASED DIGITAL PLATFORM

Results from this study found the participants' perceptions and learning outcome to be significantly related to the chosen instructional pedagogy. Students responded favorably to statements such as "I think I can be more satisfied with this course arrangement and the designated teaching method", "I think learning by using a social network, web digital platform enables me to be an active learner" & "I think my attitude toward learning the given subject is more serious on a social networking, web digital platform. However, they either agreed or strongly disagreed with statements such as "I think the online English writing instruction can fully replace the conventional face-to-face instruction", and that "I think my interaction with the instructor and other students is greater in a social networking, web digital platform."

Rovai (2002) developed a model that examined the reasons students were not retained in online learning contexts. He found internal factors such as social integration, self-esteem, and study habits affected whether or not students were retained in the courses. Nicholas' study found contact and support from peer students and the instructor as other reasons effecting student retention in online learning (2010). The presence of the instructor can provide students with a sense of comfort (Westera, 1999). Creating a sense of community can help students feel more comfortable in the course while possibly decreasing existing anxieties. Having a well-organized course with supportive features such as individual chat forum (can always be substituted by face-to-face meeting if necessary) and a discussion board where students are able to openly interact can alleviate feelings of isolation or disconnection (Angelino, Williams, & Natvig, 2007; Hara & Kling, 1999), and help improve not only students' self-efficacy beliefs, but also increase their value of the course.

RECOMMENDATIONS FOR FUTURE RESEARCH

While this study presented research on the students' perceptions of learning English writing on a social networking platem, it is only a starting place for future research. The followings are additional recommendations for future research. First, this study should be replicated in a different setting with a larger population of students. Secondly, future research may want to examine other variables beyond those analyzed in this study to determine if additional relationship may exist. Future research could explore possible group differences to determine when and if changes might occur.

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