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Editorial

Looking backward into the future
Donald G. Perrin

Training is focused on specific skills to meet immediate needs. Education is intended to provide a broad base of knowledge, skills and aptitudes (KSAs) to meet future needs. It is easy to measure success in training. If the pilot cannot safely land the airplane, of the French student cannot speak the language, the deficit is obvious and can be corrected. Performance tests work for training but not for education, because education is preparation to live and work in a world that is being defined that will emerge in the future. How then can we design an educational system that truly prepares our students for the future?

Most KSAs, the basis of school curriculum, relates to the past. Some of it relates to the present. And very little of what we learn in school relates to the future. Yet the present and the future should dominate the educational experience. Emphasis in the curriculum should be looking forward, not backward. So the first step for the educator is to learn more about the future. We can study relationships, observe changes, plot trends, and invent alternative futures based on observations, experiments, and simulations. We can extrapolate from the known to the unknown. We can do research studies and apply the scientific method. We can create new knowledge and innovations by numerous methods that range from extrapolations from big data to insight and sheer genius.

Ken Robinson suggested that schools kill creativity – a quality that business and industry demands for advancement and growth, without it companies are no longer competitive. Education, in its effort to control children and gain conformity, strips them of their natural curiosity, energy, and their ability to be self-directed learners. The system of rewards and punishments gets submission and obedience required for traditional methods of teaching and in the process disables much creativity and passion for learning. Good learning is defined by the will of the teacher and the obsolescent curriculum.

We actually know more about the future than we know about the past. The present is that dynamically moving ribbon that divides the future from the past. There is more happening in than the present than happened in in all past generations, and as we move our sights to the future was learn to anticipate changes, paradigm shifts, and alternative futures. We can apply divergent thinking and convergent thinking; exploration, mapping, modeling and imaging; problem solving and problem avoidance, simulations and pilot studies.

> … It is in the future where our greatest leverage is. We can't change the past, although if we are smart, we learn from it. Things happen only in one place – the present. And usually we react to those events. The "space" of time in the present is too slim to allow for much more. It is in the yet-to-be, the future, and only there, where we have time to prepare for the present.
> Joel Barker, 1993.

We need to set some goals and develop curriculum based on our ability to gather information about the future. We know that jobs and required skill sets are changing. We know that the KSAs will be very different for the student who gradates five years from now. Can we model a curriculum that anticipates and reflects those changes? And can we add a component so the student can monitor and adapt his educational experiences to the changes as they occur? This would require learners to be self-directed. This should be added to all class levels back to kindergarten so that all students within the educational system can benefit.

Instead of standardized tests, individualized educational programs (IEPs) should replace the standard curriculum. Performance for learners and teachers should be measured against futuristic goals. Tests should focus on observation skills, analysis, problem solving and higher levels of learning required for the new millennium.

Barker, Joel A. (1993) Paradigms: The business of discovering the future. Harper Business.
Baumel, Jan. (2016) What is an IEP? Great Schools, Dec 19, 2016. www.greatschools.org/gk/articles/what-is-an-iep.

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Editor's Note: Here is an instructional design model with a strong theoretical base that is eminently practical and easy to follow.

An e-learning instructional design model
for the STEM classroom

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USA

Abstract

This paper, based on theoretical instructional design and eLearning principles, presents a holistic active learning and teaching design for the Science, Technology, Engineering and Math (STEM) classroom. Two theories, the component display theory and the CCAF Learning theory (Context, Challenge, Activity, Feedback) are described as the foundation for developing the loop learner model, a highly flexible learner oriented design for the STEM classroom that moves the novice learner to the realm of mastery learning and problem solving.

Keywords: active learning, component display theory, Context, Challenge, Activity, Feedback, CCAF, learner-oriented, discovery, exploration, mastery learning.

Introduction

A Higher Education Horizon Report identified key major trends in contemporary learning as that learner-centrism, redesigning of learning spaces, focusing on active learner engagement, and continuous evaluation and measurement of instruction (Johnson, Becker, Estrada, & Freeman, 2015). The reports emphasize the need to develop, increase, and retain active learner engagement by meshing traditional content-based lectures with online educational technology and platforms (Johnson et al., 2015). The reports focus on the dynamic changing population of learners and ensure a sound educational practice meshing instructional design and eLearning principles. Report guidelines advocate an active learning experience for traditional and non-traditional learners allowing them to interact and experiment with content to reflect, assimilate, and accommodate information and experiences to develop their own truth schemas (Gee, 2000). Such an approach require a high level of challenging activity tot inspire learners to question, critique, and form their own body of knowledge (Freeman et al., 2014). The Horizon report also stated that contemporary educational institutions lacked the presence of a universal eLearning educational methodology that was built on sound instructional design principles (Almoosa, 2015). The result has been a lack of a holistic educational methodology that remains constant in face of dynamic educational technology change, learning management systems and content changes (Almoosa, 2015).

In this paper the researcher puts forth a holistic educational design and / or methodology that combines the component display theory [CDT] of instructional design and the CCAF [context, challenge, activity, feedback] eLearning approach. The researcher hopes that the holistic design will generate further theoretical discussion and practical application in contemporary course development. This would lead to development and improvement of student learning and achievement. The researcher divides her paper into four sections: the first two sections provide a comprehensive theoretical framework for the 'component display theory [CDT]' and the 'e-learning theory of Context; Challenge; Activity; and Feedback [CCAF]. In the third section, the researcher meshes CDT and CCAF to develop her own eLearning instructional design ID). She wraps up her paper with a conclusion outlining weaknesses of her paper, and future avenues for research.

Theoretical framework

The author bases her design of an active holistic of learning and teaching on fundamental theories of instructional design and eLearning. The two theories, according to the author, complement each other and provide the necessary scaffold to develop a comprehensive learning and teaching design for the STEM classroom. When meshed together, the ensuing design focuses on key attributes of reflection, exploration and application that are fundamental to the two theories.

Component Display Theory [CDT]

Component Display theory [CDT] is a systematic theory-based approach to designing instruction for learner-centered professional goal oriented environments (Merrill, 1983; Merrill, Reigeluth, & Faust, 1979; Choi, 1986). According to CDT theorists, instruction should be broadly categorized into two components - content and performance (Merrill et al., 1979). These components are further divided on an individual basis into elements and presentation modes. The former component of Content has two elements - generality and example. These two elements consist of content delivery and/or instruction presented through formats of telling and questioning (Merrill et al., 1979). The element of generality ensures that learners have a body of knowledge at their disposal to engage in 'Elaboration' (Merrill, 1983). Elaboration can be defined as an intervening space comprised of instructional help. The intervening space of elaboration is learner-centric, where the learner takes charge and starts exploring and experimenting with the content presented earlier by the instructor (Merrill, Schneider, & Fletcher, 1980). This is the stage of remembering and recalling (Merrill, 1983). In this intervening space, the learner begins to piece the content provided, and starts developing his/ her own schemata with help of educational technological tools. Elaboration is followed by the element of example where, as the name denotes, the instructor provides solved and unsolved examples through presentation formats of telling and questioning. The students have a foundation of the basic idea and are able to identify problems, troubleshoot, question, and discuss solutions.

The latter component of Performance has one major element of Practice. This element encompasses learner practice comprising hands-on collaboration, participation, and idea development and analysis. It includes cognitive processes of remembering, recalling, using, and finding (Merrill et al. 1980). In this 'practice' element of CDT, the learner takes center-stage as the instructor fades into the background. The instructor's role transforms to that of a guide, mentor, and coach. The learner has to identify problems, use content and consequent schemata to construct prototypes and develop a feasible solution. The learner engages in critical thought and collaborative activity to focus on key ideas and solutions. Practice enables the learner to gain expertise in the content including its practical application.

CDT= CONTENT [GENERALITY= TELLING/QUESTIONING] + [ELABORATION] + [EXAMPLE]

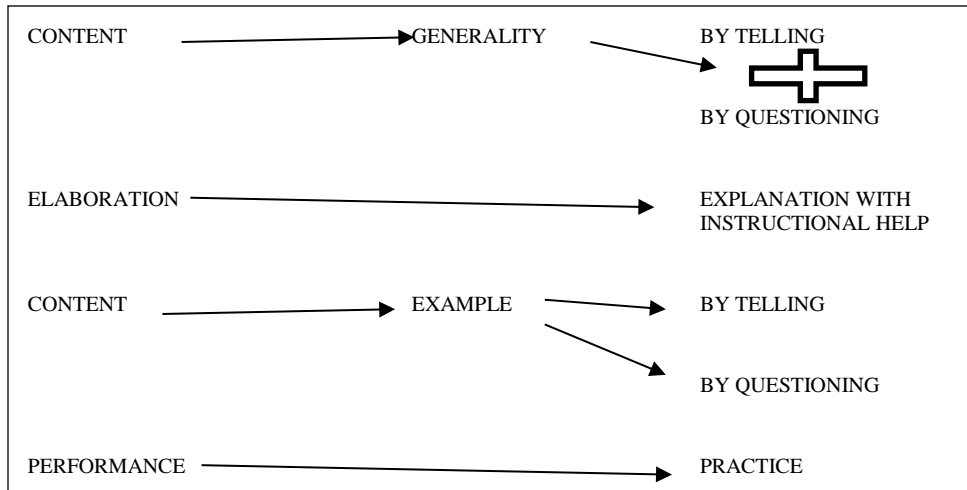   = TELLING/QUESTIONING] X PERFORMANCE [PRACTICE]

Figure 1. A graphical depiction of CDT.
Adapted and modified from Choi, S. Y. (1986). Application of Component Display Theory
in Designing and Developing CALI. *CALICO Journal*, 3 (4), 40-44.

CCAF approach

The CCAF [Context, Challenge, Activity, Feedback] is a learner-centric eLearning approach to instructional design (Allen, 2011). The eLearning model is based on primary dimensions:

a. Learning should be meaningful involving practices of exploration, questioning, reflecting, and experimentation ensuring transfer of learning to real-world situations (Allen, 2016).

b. Learning should be the bridge between theory and / or content, and practical application. Learners should gain confidence with the classroom content to be able to exercise and use use KSAs [knowledge, skills, and attitudes] learned in real life situations. Learning should involve aspects of interactivity, practice, and intrinsic as well as extrinsic feedback. This ensures that learners know and realize consequences and benefits of their learning.

c. Learning should involve discovery, challenges, and exploration (Allen, 2011). This means that learners should be allowed to search for information to solve challenges and gain mastery through hands-on application.

d. Learning should be corrective and feedback-based ensuring that learners realize their mistakes and make necessary adjustments during the learning process itself. It is imperative that feedback and assessment form a part of the learning cycle occurring as it happens and not after learning has taken place. Feedback should be intrinsic and extrinsic in nature. Learners should be given the opportunity to experience external motivators such as grades and salary increases, as well as internal motivators of consequences and drawbacks of not learning properly (Allen, 2011).

e. Learning should be a two-way process between learners and instructors. In eLearning environments, instructor visibility should be in the form of level of difficulty in challenges and interactivity.

The eLearning design begins with the presentation of content to learners identified as the Context of eLearning (Allen, 2016). The context provides a schema base for the learners and acts as a primer for the eLearning module. The designer then creates the challenge allowing learners opportunities to discover, explore, think critically and question. These components provide

learners with the knowledge and tools to master the content (Allen, 2016). The next dimension of activity is the component of interactivity and experimentation. In this dimension, learners engage with the content, test themselves, and retain knowledge. Activity is closely linked to the last dimension of feedback wherein learners continue with activity based on correction and improvement. This correction is intrinsic and/or extrinsic allowing learners to gauge and, comprehend the consequences of their learning.

In the following section, the researcher combines instructional design and eLearning principles embodied in the two theories detailed above, and develops a holistic STEM learning design.

Loop learner model

The Loop Learner model (LLM) is a five-step flexible e-learning model where learners direct the process of teaching and learning. It is composed of five stages or levels that are not sequential, allowing learners flexibility to pace their own learning. It is learner-centric with adequate use of educational technology.
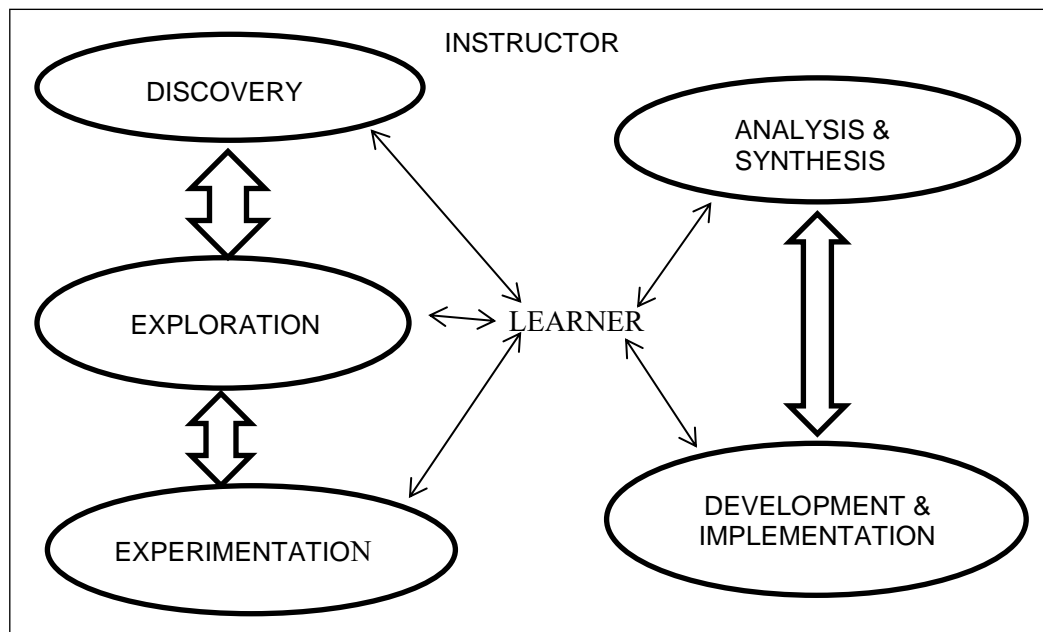
Figure 2. *A graphical depiction of LLM.*

Key features of the model are:

    a. Flexible Loop Learning allowing learner to move from one level to the next and re-visit a level if needed. As shown in the diagram a learner can begin with discovery, move to the next level of exploration, and then re-visit discovery to understand the content better before moving on. Similarly, a learner can skip a stage if he/ she feels confident to tackle the next level. For instance a learner may move from discovery to experimentation, omitting the second level of exploration. Levels can exist side-by-side. It is not necessary for the levels in the model to occur in a sequential fashion. The model design allows learners to engage in two levels at the same time. For instance a learner can engage in discovery and exploration at the same time. In another instance learners can study level four and five simultaneously i.e. analysis and synthesis, and development and implementation. This is possible when the levels share similar attributes and complement each other.

b. Use of educational technological tools in all stages. Both instructor and learners have opportunity to use educational technology to understand, explore, experiment, clarify, discuss, and explain content. Similarly learners and instructor may utilize cognitive maps, mnemonics, and frames in a computer-assisted environment to identify problems, solve matched and unmatched problems, and construct prototypes.

c. It employs the pedagogical stance of multiple perspectives which holds that knowledge must be delivered to learners through a variety of methods. Multimodal presentation of information allows learners to assimilate and accommodate information, construct their own schema, and accordingly problem-solve to seek a solution.

d. Learner control encompassing an individual paced learning program wherein learner decides when and which level to study.

e. Minimal role of instructor - the instructor is on the fringes of the teaching and learning process. The instructor is a coach and guide ensuring that learners do not meander from the learning objectives of the program.

f. Collaborative social learning is a prime focus. Learners have the opportunity to engage in group collaborative learning. They can participate in peer and instructor-led technology initiated discussion forums, whiteboards, and stimulation exercises. As a group, they are exposed to diverse audio-visual stimuli including pictorial, graphic, written, verbal, and numerical expressions at every level.

g. Assimilative and accommodative model allowing learners to assimilate content, explore the content at own pace, experiment with it through computer simulations, discussions. Learners can now make self-directed associations between concepts and facts constructing chain and spider hierarchies for enhanced individual schemata. Further, they can accommodate this schema to make it more suitable, flexible, and feasible to contemporary social dynamics.

h. Allows for critical thinking and reflection among learners.

LLM stages

The model comprises of five stages that propel learners to move beyond the novice stage of content acquisition to the mastery stage of knowledge acquisition i.e. learning and problem solving through application and pattern recognition. The five loop stages of LLM are:

a. *Discovery:* At this level, the learner is presented with the content. The instructor can present the content through traditional lectures using pictorial, verbal, numerical, or graphic expressions. The instructor also has the option of presenting the content with the help of educational technology tools. This content presentation is in the form of concepts, facts, procedures, and principles which provide definitions, explain and link relationships, and map out procedural events. This is the stage of content assimilation where the instructor delivers and the learner receives.

b. *Exploration:* This is a continuation of discovery, where the learner moves into the 'driving seat' of the learning process. The learner now has the opportunity to clarify, question, scrutinize, opine, and explore the content. The learner does this in two ways (a) using educational technology tools (b) engaging in collaborative group learning. Learners actively participate; engage in critical thinking and reflection with instructor and peer-led discussions, chats, write boards and editing.

c. *Experimentation:* During this level, learners have a knowledge base and have the ability to reflect, challenge, and create mental simulations for themselves. They can experiment with the content, forging new problems and relationships. Learners are now capable of

engaging in metacognition; making associations and applying content to real-life settings. Learners form groups to troubleshoot and discuss issues, firming their mental schemas. It is imperative for learners to be 'hands-on' at this level and realize their own biases and preferences. For instance, a learner should be able to realize preference or inclination for a specific stimuli or method. Learners use educational technology tools extensively to have a mental framework of what works and what does not. For instance, learners use Smartboard technology, Collaborize classroom, and Edmodo to gain insight into schemata of self and others. The instructor remains in the background providing support and guidance to the learners.

d. *Analysis and Synthesis:* After experimenting with the content, learners now analyze the content developing a holistic individual schema. At this point, the learner's perception and comprehension of the content and resultant associations is biased, and narrow. Social group learning again comes into play as the learner synthesis his or her schema with those of peers forming an open and accommodating schemata.

e. *Development & Implementation :* The final level of this model may seem an extension of the fourth level of analysis and synthesis. The learner is now transformed into a "lifelong learner" developing and honing his/ her own schemata to apply it to practical situations.

Conclusion

LLM makes use of multimodal channels of audio, electronic, collaborative, social, software, video, visual, and integrated interfaces to present information and knowledge to learners, enabling hands-on application and experimentation, allowing for authentic learning experiences combined with reflection and articulation. Learners have the opportunity to explore, seek connections, and collaborate to problem-solve. LLM succeeds in designing instruction which involves content and knowledge comprehension, experimentation, exploration, collaboration, continuous self-evaluation, and capacity to find solutions or 'truth.' It enables and empowers learners to develop, analyze and synthesize information, and develop and hone technical skills at their own pace. It is a holistic dynamic learner-oriented e-learning solution for the contemporary STEM classroom. It cements e-learning's thrust of 'retention and transference' of knowledge and skills churning out professionals who have the ability to comprehend, analyze, communicate, and collaborate. LLM is apt for various e-learning environments of:

- Standalone courses designed for the solo learner with no instructor and classmates
- Virtual classrooms
- Learning games and simulations in a training situation
- Blended learning environments
- Mobile learning platforms
- Knowledge management training cohort systems

The author has presented a theoretical design of a suitable e-learning STEM model that allows for transfer of skills, and attempts to close the 'tech' skills gap. However, a theoretical design has to be implemented to gauge feasibility. It is the author's suggestion that the LLM should be piloted as a tentative STEM e-learning course design for evaluation and revision.

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Editor's Note: In storytelling, stereotypes are often used so characters can be quickly introduced into the story. In learning, we use templates so students can participate immediately and practice different roles as they learn.

Online and out-of-synch:
using discussion roles in online asynchronous discussions
Cheryl Hancock and Barb Rowland
USA

Abstract

We completed a qualitative study focusing on our students' use of Discussion Roles in our general and entry level online classes and presented the information at a Brown Bag presentation for University of Phoenix instructors and staff in October, 2016. The following contains the results of the study including: 1. Ways to use Discussion Roles in class discussions without assigning them, 2. Ways to encourage students' use of Discussion Roles, 3. How students responded to using Discussion Roles, 4. Results of students' use of Discussion roles, and 5. How instructors can use Discussion Roles in the future to help adult students acclimate to asynchronous, online discussion. Discussion Roles are a particularly successful strategy for helping students use scaffolding to create discussion responses that reflect higher level thinking. Implications for improving practice related to asynchronous discussion, helping students use higher level thinking skills, and how instructors encourage students' use of roles are discussed. Finally, ideas for new types of roles to use lead the researchers to suggest further study of Discussion Roles and how they can be used by students to take control of their learning and maximize the benefits of asynchronous discussion.

Keywords: Asynchronous, online discussion, scaffolding, discussion roles, roles, non-traditional adult student, higher level thinking.

Introduction to the problem

Inside the general online classroom, asynchronous discussion environments regularly trouble many entry-level online students new to this environment or in the beginning stages of learning to use it. Even graduate level students new to asynchronous discussion may need help to develop written responses for discussion. Asynchronous discussion is also new territory for many instructors who are unsure how to help students adjust to an uncomfortable and unfamiliar environment, and the instructor's efforts are important in helping and guiding students.

Other challenges exist as well. Many students prefer to be the quiet kid in the back of the class and do not *appreciate* discussion requirements. Some students aren't strong writers, some are ESL learners, some cannot type well, and still, others just don't know what to say, how to say it, or where to go for help or answers (Hancock, 2012). In many discussions there is a lack of participation, thread extension, critical thinking, and substantive engagement with others (Baran & Correia, 2009; Bradley, et al., 2007; Dennen, 2005). The asynchronous discussion form has been considered problematic (Berge & Muilenburg, 2006; Ouzts, 2006; Yeh, 2010). It can offer students a more stressful learning situation causing frustration and missed learning opportunities.

Furthermore, finding ways to learn and use on their own is difficult for some students. Most students don't want "extra" work and won't seek out opportunities on their own (Hancock, 2012). Finding "volunteers" to learn new strategies or use new skills can be difficult in entry-level online classes where new online college students may be overwhelmed with navigating a new platform of learning.

The problems associated with asynchronous discussions hamper this type of beneficial learning. However, students can learn new strategies and incorporate them into their learning "bank" of helpful strategies for learning to analyze, evaluate, and interpret information. This presentation suggests that Discussion Roles are one successful solution that can help the asynchronous, online discussion forum become a more effective learning forum.

What can help? A structured discussion

Inside an online, asynchronous discussion, structure makes an enormous difference. Darabi, Arrastia, Nelson, Cornille, & Liang, (2011) propose that the online discussion that maintains structure creates more opportunities for engagement in the critical thinking process where meaning can be constructed. According to Gao (2014), a structured discussion provides learners with a clear set of directions, which helps students overcome challenges within the online discussion.

Structured settings offer specific protocols for student participation and engagement. The stress of creating a response on one's own is removed as students understand and meet general requirements. Feeling less stress, students can feel safer interacting with complicated topics and personal experiences (Lynch, 2002). Instructors should provide well-defined, clear roles for interacting (deNoyelles, Zydney, & Chen, 2014; Bassett, 2011; Gerbic, 2010). Structured discussions guide the learner, and students can learn to take charge of their own learning. In this more self-directed learning environment, students are more engaged in the learning process.) When students are engaged, they become active learners (Johnson, 2013).

Discussion roles structure asynchronous discussions

Discussion Roles (Hancock, 2012) offer a successful technique for helping students new to online, asynchronous discussion. Discussion roles were developed from similar roles used in Student Book Clubs (Faust, 2005) that were inspired by Literature Circles (Daniels, 1996). Literature Circles were used with young, elementary-age students to guide them in the unfamiliar territory of group discussion. Daniels writes, "[The role sheets] exist to help spark or sustain natural conversation, not to guide or provide the bulk of the talk" (1995, p. 61). The role sheets provide a guided starting point from which to discuss ideas.

Faust redesigned Daniels' role sheets to work with middle and high school readers in order to scaffold the "how" of reading with intent. This "book club" course supported Rosenblatt's (1938) Reader-Response theory by offering its students a new way to talk about reading because it "makes a case for understanding literary reading as a process whereby personal responses are continually transformed to create an ever-widening net of relations connecting individual readers with the world at large" (Faust, Cockrill, Hancock, & Isserstedt, 2005, p. 168). In the "book club class," older students combined and interpreted the reading selection and used book club role sheets for more intense critical thinking experiences.

Hancock (2012) redesigned the roles in order for them to become applicable inside online, asynchronous discussions. The natural progression offered an excellent way to scaffold response to discussion questions in writing. When used, the roles help students feel more comfortable responding in writing to discussion questions, peers, and instructors. The structure of each role is specific, removing the stress of developing a response completely on one's own. Further, each role offers a different lens through which to view a question. Identifying the role first provides students a "safe" way to discuss ideas because all students understand the role's purpose (Hancock, 2012; Lynch, 2002).

The ten Discussion Roles are: Discussion Starter; Key Terms Define; Passage Seeker; Connect to Research; Connect to Theory; Connect to Social Constructs; Summarizer; Devil's Advocate; Class Clown; Quiet Kid in the Back (see Appendix A).

These ten roles, each with a different critical focus, allow students to begin with a tool or starting point-structure. Students can understand various ways in which they can identify, examine, and make connections between ideas. Students can practice responding using higher level thinking skills and quality ideas. Roles allow students to be able to transform the way they think and "talk" in asynchronous discussion as they can learn to take responsibility for their own learning. Most importantly, students can use the discussion roles in any class where asynchronous discussion takes place, and finally, they can transfer the technique to their personal and business lives.

Theoretical framework

Constructing meaning through structure

A structured asynchronous discussion forum provides the ideal environment for the social constructivist mode of learning. When students respond to instructor questions or even peers' responses, they must "construct" a written response in order to articulate their ideas. Driscoll (2000) explains that "Constructivist theory rests on the assumption that knowledge is constructed by learners as they attempt to make sense of their experiences" (p. 376). Vygotsky (1978), the father of constructivist theory, believed that social interaction is key in the learning process, and asynchronous discussion offers dialogue between learners. The collaboration is what Bruffee (1999) calls *constructive conversation*. Students learn by joining transition communities in which people construct knowledge as they talk together and reach consensus" (p. 84). Students must be able to compare their ideas with others, negotiate those ideas through the ideas of their classmates, and construct new knowledge. Discussion Roles can alleviate the stress behind "constructing" meaning from the learning and then "constructing" a written response.

The goal of the structured discussion is not to limit student interaction or inhibit students from responding but instead to offer skills to promote higher order thinking, enhance problem solving skills, encourage examination of various perspectives, and promote collaboration (Gao, 2014: Darabi, et al., 2011). Gilbert and Dabbagh (2005) found that when elements of structure are implemented into the discussion, students demonstrated the ability to make inferences and engaged in complex thought processes that resulted in meaningful learning. The elements of structure within the discussion help move students toward engaging in higher order thinking and collaboration (Salter & Conneely, 2015; Bassett, 2011; Andresen, 2009; Berge & Muilenburg, 2000).

Collaboration

Collaboration allows students an opportunity to become active learners with peers. (Tibi, 2016). Salter and Conneely (2015) found that active learning is a critical part of student success in the online environment, and students are more actively engaged when sharing ideas and knowledge while utilizing critical thinking skills. When students collaborate and negotiate meaning, they are conveying, explaining, analyzing knowledge then comparing that knowledge with that of their peers and experts (Gilbert & Dabbagh, 2005). Students can learn to do this using Discussion Roles.

Discussion Roles help students make extended connections that can increase their motivation to participate. The discussion then becomes an incentive for students to collaborate more (Gerbic, 2010). This productive social environment fosters a more student-centered discussion where a community of learners interacts to create a shared knowledge (deNoyelles, Zydney, & Chen, 2014; Gao, 2014; Zydney, deNoyelles, & Seo, 2012).

Furthermore, using Discussion Roles, students can engage in the learning experience while taking responsibility for their learning (Salter & Conneely, 2015; Gerbic, 2010; Tu & Corry, 2003). When received well or encouraged by others, students gain more confidence to express their ideas and dialogue with others. Those who may not have participated previously may now engage

because they are given a "starting point." Discussion Roles allow students to take more and more risks when creating responses for discussion.

Self-directed learning

Discussion Roles allow students to take charge of their learning and become more self-directed in the active learning process. Self-directed learning is seen when the learner takes the initiative to engage in a learning experience and takes responsibility for completing the learning (Skiff, 2009). Conrad and Donaldson (2001) suggest that in online settings, self-directed learning activities foster engagement as students are able to take ownership of the discussion. They are free to select which topics they wish to discuss and can choose discussion threads or create their own conversations based on their own interests. Discussion Roles allow students to experiment with varying roles in order to practice these skills with others. The roles allow for substantive interaction among learners who work to explore, assimilate, and synthesize ideas (Slagter van Tyron & Bishop, 2009). Discussion Roles push students to think further than the superficial or textbook response until the learner is actively engaged with the text or topic.

When students are given choices of how to respond in discussion, as with Discussion Roles, they will learn to become more engaged in the learning process (Slater & Conneely, 2015). They will begin to think about how to make the discussion work for them. There is a sense of empowerment as students begin to take control of their learning (Zyngier, 2007). Engaging students in the learning process increases motivation, attention, and focus and promotes more meaningful learning experiences. The benefits of asynchronous discussion can be more fully realized.

The instructor

The instructor has the ability to foster engagement through learning activities and discussions. In adult education settings, research has shown that selecting specific learning strategies most suited to specific learning tasks has a positive impact on instructor-student interaction (Mellard, 2006). Johnson (2013) proposed that if instructors create a learning environment that engages students and motivates them to learn, students will do all the work and the instructor will play a facilitator role in the learning environment.

Andresen (2009) pointed out that when an instructor makes significant contributions to the discussion, the length and frequency of discussion and student posts tend to decrease. DeNoyelles, Zydney, and Chen (2014) agree that when instructor intervention is minimal, students are more likely to express their thoughts and opinions. Students could begin to rely on the instructor too much to grow the discussion. If an instructor posts too frequently, students might only focus on the instructor's posts and not consider the other posts made by fellow classmates or subsequent topics (Salter & Conneely, 2015). Tu and Corry (2003) further agree that students should be given more opportunities for collaboration and less instructor intervention. The presence of the instructor within the discussion forum does not generate engagement among learners, but instead, the Discussion Roles, or the techniques the instructor employs are what engages students.

Safe experimentation

Discussion Roles offer the structured environments a "safe" space where ideas are respected because students know the others are also using the role sheet. For example, identifying the Devil's Advocate role (see Appendix A) when posting shows the others that the student is not being obstinate but argumentative, a legitimate literary genre. Students can then relax and experiment with ideas, fostering learning. When in this safe space, Lynch (2002) states that "students report that they actually learned more, felt closer to peers, and got to know their instructor better than they ever did in the traditional classroom" (p. 69). Discussion Roles allow students to take intellectual risks and worry less about looking foolish for their ideas, suggestions, or personal experiences.

Students using a structured form of discussion are more engaged and find the structure helped them explain their ideas (Hancock, 2012; Salter & Conneely, 2015). The structure helps them consider how to respond to questions and the topics presented (Hancock, 2012, 2016; Nussbaum, Hartley, Sinatra, Reynolds, & Bendixen, 2004, p. 23). Students using structured roles offer more evidence to support ideas in their posts and seek more defense for their ideas (Hancock, 2016; Oh and Jonassen, 2007). Scheuer, McLaren, Weinberger, and Neibuhr (2013) determined that students provided more elaborate and meaningful comments in structured discussions and stated they had a more positive learning experience. The goal of a successful asynchronous discussion is to form a structured and safe environment that will maximize the benefits of an asynchronous discussion and help students participate and learn more effectively.

Methodology

Limitations of study

The study was an informal analysis of how students and instructors use Discussion Roles in asynchronous discussions to increase engagement. Results and conclusions were presented in a Brown Bag presentation in October, 2016 to University of Phoenix instructors and staff in order to promote further analysis of techniques that increase student engagement in asynchronous, online discussions. IRB permission to publish the study findings was awarded in March, 2017.

The study relied on student volunteers, even when instructors assigned roles. This means that requiring the use of Discussion Roles might have produced more distinct and in-depth findings. Furthermore, students who would have benefited most from using Discussion Roles in order to create meaningful responses often did not use them, and those students declined to be surveyed as to the reasons. Instructors observed that students who struggled in discussion were those who did not use Discussion Roles or dropped the course before using the roles.

Student demographic

Students in this study were adults, from 18 to 50+ years old, enrolled in entry-level, general education courses under the College of Humanities and Sciences of The University of Phoenix (The University of Phoenix, 2016, p. 87). The majority have never engaged in asynchronous discussion academically. The majority identify themselves as parents with full- or part-time jobs, having a GED or equivalent and little to no college experience before enrolling (2015, p. 16, 24). Most of the older students who have college experience have not attended courses in many years. To add, entry level students overwhelmed with navigating a new course platform and design comment that they don't want extra work (Hancock, 2012). They mention being overwhelmed with navigating a new platform and seem to focus more on meeting minimum requirements and completing assignments.

Lack of assigned roles

The basic entry level courses, GEN 201 Foundations for University Success and ENG 147 University Writing Essentials, included in this study did not allow for assigning grades to using Discussion Roles, and to avoid bias, Discussion Roles were not required. They were, however, encouraged in the beginning of the courses throughout and to the end of each course.

A discussion learning activity created for students in Weeks 1 or 2 (See Appendix D) encouraged students to read over the roles and analyze how they feel about writing discussion responses. The research question asked: Would using Discussion Roles help them utilize higher level thinking skills when creating responses?

Inside the asynchronous discussions studied, students were encouraged by the instructors to use the roles throughout the discussions each week. One instructor created separate posts entitled "Use a Discussion Role" (Instructor A). Another instructor assigned roles for students,

encouraging them continuously to use the assigned role, and then expands upon other roles in future weeks (Instructor B). Both instructors agree that the more students were encouraged or rewarded with praise, the more they utilized the roles.

A variety of methods for using Discussion Roles typically reflects personality of the instructor. When instructors do not support a method, the method will usually fail with students (Hancock, 2012). However, when instructors encourage a method, as in this study, students are more inclined to find the method useful and valuable.

Findings

This research study confirmed that asynchronous online discussion challenges entry-level online college students. Conventional discussion strategies do not work the same in the asynchronous environment, so new strategies are encouraged. Discussion Roles are successful as scaffolding for written responses. The roles allow students to feel comfortable creating discussion responses, they encourage students to use higher level thinking skills, and they allow students to take control of their own learning in order to transfer these learned discussion skills to outside situations and experiences.

Qualitative methodology

Use of discussion roles in this study

This research is an informal, qualitative inquiry focusing on instructors and students' perspectives concerning their experiences using Discussion Roles in online asynchronous discussions. Discussion Roles were presented differently by instructors in this study. All of the following methods were used with students, and they can be adapted for individual instructor use. Strategies that failed or were awkward were either removed or adapted to meet specific course needs. For example, one instructor determined that creating messages with prompted subject headings such as, "Use a Discussion Role," had more responses from students than just asking students to use the roles.

Instructors can add a learning activity/ discussion in Week 1 (See Appendix D) specifically designed to encourage talk about asynchronous discussion challenges and how Discussion Roles can help. Students could be guided to simply use the roles at their convenience when responding in discussion.

When using learning teams, instructors could assign each team member a role to use when working together. The roles can be switched each time students meet, so all students have a chance at experiencing each role. Additionally, an entire learning team may be assigned a role and must assume that role as a team. This might work for the more difficult roles such as "Connect to Theory" or Connect to Social Constructs." As a team the students must respond as the Role. This may help students begin to understand the more difficult roles and how to use them.

Instructors can add a first message with the subtitle, "Use a Discussion Role," and add a discussion question employing students to use a role and also identify the role used. The identification of the role used is important in creating a safe space to learn and in helping readers better understand the writer's objectives.

Private messages (PM) can be sent to students who are strong in discussion asking them to respond to others using the Discussion Roles. This will both model and encourage peers to use the roles themselves (see Appendix G). When calling struggling students who have difficulty writing quality responses in discussion, instructors can recommend the student use the roles. While encouraging their use, the instructor can review the roles, and ask the student specifically to use the roles when responding.

Instructors can provide weekly feedback to students that encourage them to use the roles. The instructor might mention how the participation goals could be met more specifically if the student used the roles. Also, if the instructor notices a student struggling with a certain concept in the weekly assignment, he or she might mention how using a discussion role could have helped the student better understand that concept. As a way to review roles, instructors could have students assume roles, but not reveal the exact role and the other students must then "guess" what role the student has assumed. This may be a way to reflect on the roles or to begin a discussion of the roles.

Data collection

Undergraduate, first-year, general education online asynchronous discussions were studied during the year 2016 at The University of Phoenix in order to study the usefulness of Discussion Roles. An informal study was conducted beginning January to December 2016, covering 18 separate, five-week classes, in order to test the strategies and procedures of this case study. The results of the study were presented in October, 2016 to faculty and staff of the University of Phoenix. Permission to publish the findings was granted in March, 2017. All names were changed to protect student privacy.

Cheryl Hancock, Ph.D. (Instructor A) taught nine online courses of GEN 201 *Foundations for University Success*, and Barbara Rowland, Ph.D. (Instructor B) taught nine courses of ENG 147 *University Writing Essentials for The University of Phoenix* during 2016. Each class contained 20 to 30 students, respectively, at the start. Both courses are made up of freshmen adult students new to online, asynchronous discussion. Online asynchronous discussion occurs weekly in first-year courses with new topics beginning each Tuesday. University of Phoenix instructors are actively encouraged to help students learn by using proven methods.

Students involved in this case study were volunteers, and no grades were given or taken away for participation or not participating in the use of discussion roles inside asynchronous discussions. Data was collected in the form of student surveys, instructor surveys, asynchronous discussion threads and responses, and "ready-made" information. Participating instructor and students were surveyed before, during, and/ or after the use of discussion roles to better understand their perspectives on how the roles helped students write responses in asynchronous discussions.

Discussion roles (Appendix A) were explained to students in week 1 (Instructor B) or 2 (Instructor A), and throughout the courses. Students were observed by the instructors and then surveyed (Appendix B) privately at the end of each course. Data was extracted from students' surveys and discussion responses. The participating instructors were interviewed at the end of classes (Appendix C). Data was taken from instructors' surveys including how discussion roles were viewed and used, as well as the ease or difficulty of use. Reminders to students (Appendix E) can be posted in individual, private forums in order that students not forget to use the roles in future discussions (since participation is voluntary). This was necessary some of the time.

Data analysis and findings

The results of the data from this particular study support previous studies (Hancock, 2012) concerning the use of Discussion Roles in asynchronous, online discussions. Students, who used Discussion Roles, created higher level thinking responses. "There is no doubt students who used the roles created responses that were more detailed, thoughtful and engaging" (Instructor B). Instructor A noticed an immediate change in students' written responses. She writes, "When they use the roles, they do write 'better' responses. The word 'better' encompasses length of responses, types of thinking inside of responses, and even examples and details included in responses." Instructor B further commented on the success of role use. She writes, "I found that

after the first time I used [the roles] I needed to be sure that I provided students with plenty of instruction [first]. I didn't do this as much the first time around, and I could tell that it affected the way the students used the roles. Getting the students familiar with the roles, what they are, how to use them, and why they should use them, is very important. Without that connection, students are apt to see this as just 'one more thing' they have to do."

Students found that using Discussion Roles created a safe learning environment. One student mentioned that while the assignment was difficult, he was able to overcome his fears and realize that he can "do this" (Matthew). He further states, "I think assigning this assignment was the best because you have over six roles commenting on the same chapter in six different ways or more. I also feel that the information from the role discussion introduced you to the fear of change….This was difficult because it was something I wasn't used to, but once I participated it wasn't as hard as I made it." One student who tried the Discussion Starter role "for the first time" stated, "I found this one challenging because I was not sure if any of my peers would respond to my questions. Turns out that one did. I was pretty excited!" (Karla).

Instructor B describes how students relax into discussion: "I saw students engaging with one another more often. At first they might have just commented on the role itself (that their peer used), but as time wore on, students began to engage in conversation with one another and build on the ideas presented in the conversations." Instructor A also mentions, "One thing I did notice is that when lots of students used the roles, others used them, too. Like, seeing peers using roles encouraged other students to use them." A response from Frank, a student participant, agrees: "Discussion [roles] are a good idea to help the student get involved in the discussion more easily by giving them a target objective." Another student participant further agrees: "After reading through discussion roles, I do feel more comfortable now when responding to a discussion. I also know how to respond and ask questions or challenge the statements made in the discussion and making an argument or agreeing with the statements" (Jennifer).

Students comment on learning ten different ways a person can view one topic or question. For example, Jennifer, a student participant stated, "After reading through discussion roles, I was actually very surprised to see how many different ways a person can respond to almost any topic!" Here, Jane, another student participant reacts similarly: "Wow. What [an] eye opener. I had no idea there were so many ways to put yourself into a discussion." Not only are they commenting on what they learn but also what they learn from each other, such as this response from participant Susan: "Also I like hearing information on the same topic from different people because they all (even if they have the same viewpoint) have their own spin. It creates a more vibrant understanding and makes it easier to have a conversation on the topic."

Students practiced research skills and learned how to defend their ideas. They learned to question popular beliefs and assumptions about themselves and the world around them (specifically while juggling work, children and college classes). Students learned to focus on vocabulary and grow their own as the Key Terms Definer. One student comments that as the Key Terms Definer she had the "opportunity to read the entire chapter and provide [her] classmate[s] with some valuable information; broaden their vocabulary" (Carrie).

Students learned to extend the thinking of the discussion. One student states, "I realize sometimes when responding to someone else's post, just saying I agree is not enough. I have to muster up enough conversation without sounding redundant." (David). Another student participant states, "[Roles] made me think outside my own thought process, and helped me see things that I missed when reading" (Mary). Still another describes having fun with the roles: "I used the devil's advocate because it comes natural to me. I like to argue and this role allows me to argue in a positive way" (John).

Lastly, students can learn to think independently of the discussion roles, and they can transfer the skills to their outside lives. One student mentioned, "I use discussion roles without even realizing it. In my experiences in life, I encounter many people…I cannot deal with everyone the same way. I have to change my approach often to better serve myself and others" (Jason).

The data collected is both positive and encouraging, and it should encourage more use of roles in asynchronous online classrooms of all kinds.

Conclusion

The first conclusion is that Discussion Roles work. In other words, "Discussion roles help a student to become aware of one's writing as well as how it comes across to others. Creating awareness in one's writing is a step toward creating meaningful, interesting, and quality responses" (Hancock, 2012, p. 106-107). This second finding is also true: "The assignment of roles is a crucial structuring tool to enhance the knowledge construction processes in asynchronous discussion groups when roles are introduced right at the start of the discussions" (De Wever, 2009, p. 521). Students are more likely to use the roles if the roles are introduced in the beginning of the course and encouraged throughout.

A third finding includes the way students become more aware of ten different ways to view one discussion topic or question. "Now that I have been made aware of the different roles, I feel I can better understand where the person is coming from that falls under each role [and because of this] we can learn more from each other through the discussion process" (Hancock, 2012, p. 75).

Introducing students to the roles in week one was very important in helping students understand each role and the reason behind using them. Without this formal introduction to the roles, students had much more difficulty using and understand the purpose for using the roles Students were more comfortable using the roles when given them in week one. Next, assigning roles took the pressure off students figuring out what role to use or only using easier roles. Students became aquatinted with all the roles. This allowed for direct feedback to be given to the student about the particular role as well as suggestions for using the role throughout the week.

Finally, the roles gave students a purpose when responding and helped them move beyond the simple "I agree" posts or plagiarizing the reading and other students' posts. Discussions that are structured can be for extracting information, but most importantly, for enjoyment, making connections, and formulating new perspectives. The structure does create a "safe" space for students to express themselves without fear of embarrassment. The scaffolding of higher level thinking skills means students can take control of their own learning in college and transfer this thinking to real-world environments.

Future study

Future studies should involve ways to entice students to use Discussion Roles. "I was excited about using them in my class; however I wasn't exactly sure how I would implement them so that students would actually use them. I think that is always our greatest challenge-getting students to use the tools that will help them" (Instructor R). "They needed me to trick them into using the roles. I'm not allowed to force students to use the roles. I can't give a grade for using them or take a grade away either. There was no incentive, other than using a great learning method that enticed students to use the roles. They appreciated encouragement and modeling, but in the end, finding ways to entice students to use the roles proved difficult" (Instructor A).

Future studies could expound on Discussion Roles and include Character Roles or Imaginary Roles. Character roles might allow students to experiment with point of view, and imaginary roles might allow students to step into another's experiences.

Future research can study team roles where an entire learning team may be assigned a role and must assume that role as a team. This might work for the more difficult roles such as "Connect to Theory" or Connect to Social Constructs." As a team the students must respond as the Role. This may help students begin to understand the more difficult roles and how to use them.

Future studies could compare data of voluntary student use of roles and mandatory student use of roles. Focus could identify the extent to which students who are required to use roles, benefit from using roles. This would allow for all students, no matter their individual description, to be studied.

Since more students are finding themselves in such discussions, further research should be continued in order that asynchronous discussion best serve students and so students can grasp all the benefits of asynchronous discussion.

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APPENDIX A
Online asynchronous discussion roles

Online discussion can create uneasy feelings in students who do not always know where to "start" when responding, and the requirement means discussion cannot be avoided. The following Discussion Roles can help when responding in discussion by offering step-by-step "scaffolding," or a formula for constructing your responses.

Each role offers an important perspective to discussion. Read through all 10 of the discussion role explanations and examples below. The topic used for the examples is, "The important traits of the college essay." The topic and examples can be written for any and all types of courses and discussion topics.

Choose a role you would like to fulfill for your own discussion. Identify the role at the bottom of the post. (Using these roles is suggested and not required in order to participate in discussion.)

1. Discussion Starter

For this role, think of being a discussion leader, and consider questions that will begin a particular discussion about a part of the students' post. Identify your thoughts, concerns, and feelings about the person's post and the topic. Find something noteworthy about another student's post, and ask for further information or research findings.

Examples of questioning include:

    a.   Questions that ask for verification or additional information

    b.   Questions that probe assumptions

    c.   Questions that probe reasons

    d.   Questions about alternative viewpoints

    e.   Questions that probe consequences or implications

Example: What is the organization of the essay? Which paragraph comes first, second, etc.? How do you know?

2. Key Terms Definer

This role allows students to focus on identifying, defining, as well as analyzing and explaining key terms being studied.

Example: As I was reading, I learned the definition of "thesis statement." A thesis statement is one short, concise sentence, usually found at the end of the introduction that states one's essay topic. Now, I'm having difficulty making just one sentence. Is anyone else having this problem? ☺

3. Passage Seeker

This role allows students to focus on specific passages that "jumped out" or grabbed his or her attention. Relate the passage or quote to the context of the story, and make another connection to real-life events or character motivation.

Example: In Chapter 25 of our reading materials, Smith (2010) states, "Asking questions is one way to draw in the audience" (p. 20). Wow. I never thought of that before, but now I'm wondering what types of questions I might ask my audience. How does this sound? "Are you afraid of the hairdresser? Have you gone in for a trim and come out with a bowl cut?" These questions might get my reader's attention. I think this has happened to everyone!!

4. Connect to Research

For this role, students should provide citation information for further research on the topic. Determine your source, whether it is credible, and how the information connects to the discussion topic. Be sure to follow correct citation format.

Example: I was thinking about the statistics on how many professional jobs wrote essays on a regular basis. I really hoped that I wouldn't have to as an accountant! However, I found on www.accountantslive.com that 90% of the job requires writing! I almost fainted! ☺

5. Connect to Theory

This role requires students to offer the theory behind the topic at hand. What is the appropriate theory? Relate and link your theoretical input with the discussion topic, and think of those you might be lacking or that might be suggested. Ask fellow students for feedback on the theoretical concepts you have brought to the discussion.

Example: In one of my other courses (Sociology), we were discussing the effects of errors in writing. We decided that not only do errors show laziness, but they can also make us seem uneducated. Smith (2010) states, "Errors in writing made me choose not to hire someone. I figured that if the person couldn't try to write well, then he wouldn't be a good food server either. It's about attention to detail" (p. 240).

6. Connect to Social Constructs

This role requires students to focus on a social aspect of the topic at hand. Who is the group identified, and what cultural uniqueness is offered or did you notice?

Example: I researched other countries' emphasis on essay writing because I thought American schools were too tough on writing practice. However, I learned otherwise! I found that China, Europe, and Canada also require students to learn to write essays (Brown, 2010, p. 3). In fact, most other countries learn to write essays in English and their native languages.

7. Summarizer

This role allows students to summarize the main ideas of the reading or his or her ideas about the topic.

Example: Smith (2010) tells us that essays have three basic parts: the introduction, the body, and the conclusion (p. 4). I would like to offer that the thesis statement should also be one of these parts that it's just that important to remember. We shouldn't neglect to recognize its importance. Without it, one's paper lacks the statement of purpose.

8. Devil's Advocate

For every idea, there is an opposing idea; this is where devil's advocate comes in. The role allows students to argue, politely of course, with students' ideas. Argumentation is a skill best learned in discussion, but it also allows students practice with debating ideas.

Example: Evelyn, you stated that your essay would work better as process analysis, but I disagree. Wouldn't your topic be better organized with the cause and effect order? It seems you want to define the disease, but I think your topic would be much more interesting if you show the cause of the disease and then the effects. You could use a good example and then extend your ideas more than in an information essay.

9. Class Clown

This role is not as it seems. The idea is not to disrupt the class but to disrupt our thinking. Satire is a useful tool used by many, many writers. Hyperbole is extended exaggeration.

Example: When I was a kid, I thought essays were invented to make my hand cramp and cause kid-sized headaches! My brother used to call them "baby vampires" because they would suck the life out of us, and the teacher was their evil ruler!! Ah-ah-ahhhh! But, now that I'm older, I can see the usefulness of being able to write so that others can understand my ideas. I don't want my writing disorganized and full of errors.

10. Quiet Kid in the Back

We all know the quiet kid in the back of the class who never says a word, not even when called upon. Well, now, the quiet kid in the back can have a distinctive role. This role allows students to provide a generic and general response in order to receive credit for a substantive response. This person can also agree but is asked to explain why he or she agrees, and add an example to expound ideas.

Example: The reading tells us that an essay should have an introduction, body, and conclusion, a thesis statement, and at least five paragraphs. Most importantly, each paragraph should have a topic sentence with supporting sentences. Organization is important and is determined by the purpose of the essay.

APPENDIX B.
Private Message: Request for Student to Complete Survey

Dear Student,

I am wondering if you had a chance to read through or even use the Discussion Roles that were posted in week one. If you did read through them or use any of the roles at any point during our discussions, could you please fill out the brief student survey I've attached here?

Your comments and experiences will help me better serve future students in discussion. I want to know your thoughts on whether Discussion Roles helped you.

I would really love to hear from you! Your responses are private, and honesty is much appreciated. Thanks so much for your help!

Sincerely,

Instructor

Student Survey Questions   Name _____

Are you new to online discussion? When was your first online class discussion? What was your experience?

Knowing you *must* participate, what are your specific feelings or emotions about the weekly discussion requirement?

What do you find is the most difficult aspect of responding to discussion questions? What about to other students?

Do you think your discussion and participation responses are good? Why or why not?

What were your first thoughts about the use of discussion roles (week 1 discussion)?

Have the discussion roles helped or hurt your discussion experience? Explain.

Choose a discussion role you used. Specifically, which of the discussion roles did you find most helpful or interesting? Explain.

When you enter the discussion forum, do you have the role sheet near your computer? Where? If not, why?

Will you continue to use the discussion roles in future courses? Why or why not?

What improvements do you think you need to make to your discussion responses?

Did you feel pressure to use the discussion roles in our course? If so, explain.

APPENDIX C

<u>Instructor Survey Questions</u>   Name_____

1. Describe your previous experiences as an instructor participating in online asynchronous discussion. (Try to be as detailed as possible, and use examples.)

2. What were your initial thoughts about the use of discussion roles (week 1 discussion)?

3. After offering students the discussion roles, what specifically did you notice?

4. Did you notice students favoring one role over another? If so, which one?

5. In your opinion, did the discussion roles help or hurt online students participating in asynchronous discussion? Why or why not?

6. When students used the discussion roles, how were their responses different than before using the discussion roles?

7. Will you continue to use the discussion roles in future courses? Why or why not?

8. Are there any other comments you would like to mention?

APPENDIX D
Week 1: Initial Discussion Roles Learning Activity Example

View the attached document on using Discussion Roles. Then, read and respond to the following bulleted list of questions.

▪   Do you have trouble when responding in discussion? Do you get "stuck," wonder if you sound silly, or just don't know where to begin or what to say?

▪   Consider how you normally participate in discussion. What is your usual participation level?

▪   Do you know how to respond by including the reading? Can you bring in outside sources or theory? Can you respond in various ways (or do your responses sound like everyone else)?

If this is you, then please read the attachment to the right (see Discussion Roles link).

▪   Consider the roles presented to you in the attached document. Could utilizing these roles help you when participating in discussion? How? Why or Why not?

▪   Could the roles help you when responding to other classmates in discussion? How? Why or why not? Please explain your ideas.

APPENDIX E

Week 2: Learning Activity

In Week 2 let's try something new that may help us meet the weekly participation requirement and help us respond to the readings. In the Week 1 Learning Activity I posted a list and a description of Discussion Roles that can help us discuss the readings and offer another tool to help respond to classmates' posts.

I will assign you a particular discussion role from the list. You will assume this one role which you may use anytime you respond to the readings or your classmates' posts. I will notify you of your role in a private message at the beginning of each week. I challenge you to use that discussion role throughout the week. You do not need to use the role every time you respond. Feel free to use your role whenever you get stuck.

Think about those difficulties we mentioned in our Week 1 discussion. One of those difficulties was repeating what others have already said. This is a great time to use a discussion role because it offers an alternative response from those of your peers. Remember to identify your role when you use it. I just know you will be great at this!

Private Message to Student Assigning Role to be used:

Student, your role assignment for the week 2 discussion is Quiet Kid in the Back:

When you respond to the discussion please first announce what role you have been assigned and then respond to the reading or your classmate using that role.

Please do not stress out over this. This activity is just a fun and interesting way to think about the readings. There is no "right answer" here. This is a way to challenge your thinking.

Here is the definition of your discussion role:

Quiet Kid in the Back

We all know the quiet kid in the back of the class who never says a word, not even when called upon. Well, now, the quiet kid in the back can have a distinctive role. This role requires you to provide a generic and general response to the conversation. This is the one time that you can simply say that you "agree" or "disagree" with a comment from the discussion; however you must explain why you agree or disagree, and add an example to expound ideas.

> **Example:** Tim, I agree that writing is a part of the way we communicate with others. If I didn't text or email I do not think I would communicate with anyone these days! I often wonder if anyone actually uses a phone to talk to someone anymore.

I know you can do this and I am looking forward to reading your response!

APPENDIX F

Class Messages: To All

Class, you did an excellent job with the Discussion Roles Activity during Week 2. Let's keep this going! You have received a private message assigning you a new role for Week 3. Don't be afraid to just jump in and give it a shot. I will guide you through this, but if you have questions, ask them. I am impressed at the discussion responses being generated! Here are a couple of things to remember:

1. Read over your assigned role, and ask questions about what you are to do.

2. Don't be afraid to make a mistake. This is a way to challenge yourself to dig deeper into the material. You will get credit for your response if you make a solid effort. The goal is to stretch yourself to think about and talk about the readings in a different way.

3. Don't forget to interact with and encourage one another.

Thanks for your hard work! I love the conversations!

Private Message: Second Role Assignment

Greetings Student!

Last week, I assigned you a Discussion Role, and you did a great job using it! I am really impressed that you challenged yourself to use the role, develop a great response, and even encourage someone who used roles (tailor feedback toward the student's effort in week 1).

Discussion Roles offer such a variety of perspectives. Students who use the roles tell me that using them helps give them ideas that they had not thought about before.

Here is your new role for Week 3:

Quiet Kid in the Back:

> We all know the quiet kid in the back of the class who never says a word, not even when called upon. Well, now, the quiet kid in the back can have a distinctive role. This role requires you to provide a generic and general response to the conversation. This is the one time that you can simply say that you "agree" or "disagree" with a comment from the discussion; however you must explain why you agree or disagree, and add an example to expound ideas.

> Example: Tim, I agree that writing is a part of the way we communicate with others. If I didn't text or email I do not think I would communicate with anyone these days! I often wonder if anyone actually uses a phone to talk to someone anymore.

I look forward to reading your creative and critical thinking responses this week. Keep up the great effort!

APPENDIX G.
Private Message: Encouraging Students Feeling Discouraged

Dear Student,

I would love for you to be a part of the Discussion Roles Activity. I know it can be scary to jump into something that is different, but don't worry. I'm here to help you!

I remember when you commented in Week 1 about how participating in the discussion can be difficult (tailor to specific student's comments). You mentioned that many times when you begin to make your posts for the week, you find that someone has already made the comment you were going to make. You mentioned feeling "beaten to the punch." I totally understand how frustrating that can be.

Keep in mind that using the Discussion Roles can be one way to help avoid some of that frustration. When you run this situation, try using a discussion role.

Each roles offers a different way of responding to the discussion. Roles help you view the topic from a variety of perspectives, so you can create a unique response. Students who use the roles tell me that using them helps give them ideas that they had not thought about before, so I'm sure this will happen with you, too!

I really think you would be great at this! I would love to see how unique your ideas become when using Discussion Roles. Why don't you give it a try? Let me get you started it.

One time this week make a response as the "Quiet Kid in the Back." Take a look at the role below and see how you might be able to include this in one of your posts this week. I will look forward to reading what you develop!

Quiet Kid in the Back:

> We all know the quiet kid in the back of the class who never says a word, not even when called upon. Well, now, the quiet kid in the back can have a distinctive role. This role requires you to provide a generic and general response to the conversation. This is the one time that you can simply say that you "agree" or "disagree" with a comment from the discussion; however you must explain why you agree or disagree, and add an example to expound ideas.

> **Example**: Tim, I agree that writing is a part of the way we communicate with others. If I didn't text or email I do not think I would communicate with anyone these days! I often wonder if anyone actually uses a phone to talk to someone anymore.

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The role of social media networks in shaping the e-content generation

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Jordan

Abstract

This research paper shows how Social Media Networks (SNS) used by university students, positively or negatively has influenced the access and availability of e-content. It presents the results of a detailed study conducted at The University of Jordan (UoJ) that comprised students from 19 faculties. A set of 1,015 students were asked about their opinions concerning the usage of Social Networks regarding the connectivity environment, familiarity with social networks, used languages along with their friendships counts, and their feedback about the effect of Social Networks on e-content generation. Their opinions were thoroughly analyzed. The results indicate that about 98% of UoJ students who can be described as "digital natives" believe that SNS have a great impact on shaping e-content generation; regardless of the gender of faculty and students, they agreed that SNS play a key role in many aspects of their lives.

Keyword*s*: publishing, e-content, Social Media Networks (SNS), Facebook, Twitter.

Introduction

There is no argument that the amount of information, data, material and content available online in this era is magnificent. The availability of e-content has been extended even more with the appearance of Social Media Networks that do not limit the amount of content that can be published. All types of SNS such as Facebook, Instagram and Twitter have made their user space unlimited; users can publish as much information as they can with minimum interference from these SNS. These networks have become a platform for e-content generation in almost all domains of life (Agichtein et al, 2008).

SNS are also used to help people communicate cheaply and efficiently; the distance has no effect. As a result, the whole globe has become like one small village, where new events and publications are available to its users on the fly anytime and anywhere by just making a few clicks on their smart devices. SNS use software that is designed by experts to allow users to exchange views about any topic; they allow people to form virtual networks of "friends" who might be located in different parts of the world. SNS attracted people in academic institutes to take advantage of them; they have been used to keep pace with new research and publications in all fields; for example, students remain updated with their courses and topics of interest by learning new techniques that benefit from innovative technologies such as E-Blogs, Facebook and Twitter. One major facet of SNS usage is e-content; it becomes a hot research topic where people employ SNS to publish research findings, electronic books and other forms of publications (Thomas, C., 2013).

The wide spread adoption of smart phones and other new technologies made use of SNS popular and handy. People rely highly on these devices to get their job done easily and attractively. SNS is a new arena for both students and instructors to gain new experiences and exchange views; they can also be used to raise the awareness level.

Having said all this, SNS does have some drawbacks. Students should seek content from reliable resources. Likewise, content that they share or publish should be on reputable sites with blogs, referee or editorial supervision. Some sites actually conceal negative and wrong content that is hard to discover by normal users (Anria Sophia van Zyl, 2009).

In this paper, we conducted a detailed study on 1,015 UoJ students who are studying a Social Media Networks course offered by the King Abdullah II School for Information Technology to all university students as a university elective course.

Sample participants were students with an age range from 18 to 22 years. The experiment lasted over half an hour to answer the survey questions in order to address the hypotheses. The research hypotheses addressed in this research are shown in Fig. 1.

H1: Regardless of faculty and gender, the majority of students in The University of Jordan tend to connect to social networks through smart phones that have Android Operating System (OS) and they use WhatsApp to communicate.

H2: Regardless of faculty and gender, students at the university tend to spend extensive time working on Facebook; they like Instagram but not Pinterest.

H3: Regardless of faculty and gender, the majority of students in the university have more than 200 friends and prefer using the English language on Social Networks.

H4: Social media has positively impacted e-Content generation in many aspects including producing more content, working with blogs, building good relations with publishers, raising competition between publishers, reducing paper usage, publication dissemination, and staying up-to-date.

Figure 1. Research hypotheses.

To the best knowledge of the authors, this type of study has not been presented in the literature. The contribution of this work is to focus how SNS constitutes the future repository for information and decisions and how these SNS are shaping technology; however, the main focus is on users' perceptions and reflection on e-content generation in SNS.

The rest of this paper is organized as follows: section 2 reviews some related studies about SNS with some issues covered in the field. Section 3 presents the methodology we followed; it describes the purpose of this study, participants and the questionnaire. The analysis of results is discussed in details as presented in section 4. Finally, the conclusion is drawn in section 5.

Literature review

Social Networking sites allow people to create profiles where they can share information, ideas, and career interests via virtual communities. Many researches focus on the Social Networking definition, their effects on individuals, and their advantages and disadvantages; other research focuses on their uses in business, education, tourism and journalism ((Sajid, 2016), (Leungh, D.,2012), (Thomas, C., 2013), (Anria Sophia van Zyl, 2009)), a few focus in Social Networking e-publishing.

The definition of SNS is explained in different literature resources and most give the same meaning. According to (Boyd and Ellison, 2007) the definition of social networking is as follows:

"Web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system".

They explained that the SNS backbone consists of visible profiles and the profile is generated from answers to questions, such as age, location, interests, etc. Some sites allow users to upload pictures, add multimedia content or modify the look and feel of the profile. Others, e.g., Facebook, allow users to enhance their profile by adding modules or applications. They discussed that the Social Networking features arose from relatively unsuccessful experiments, like sixdegrees.com.

According to Kietzmann, et al, (2011), "Social media employ mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated-content". They present a framework that defines social media by using seven functional building blocks: identity, conversations, sharing, presence, relationships, reputation, and groups as different social media.

1. The **identity** functional block represents the extent to which users reveal their identities in a social media setting.

2. The **conversations** block of the framework represents the extent to which users communicate with other users in a social media setting.

3. The **sharing** block represents the extent to which users exchange, distribute, and receive content.

4. Building the **presence** block represents the extent to which users can know if other users are accessible. It includes knowing where others are, in the virtual world and/or in the real world, and whether they are available.

5. The **relationships** block represents the extent to which users can be related to other users.

6. The **reputation** functional block is the extent to which users can identify the standing of others, including themselves, in a social media setting.

7. The **groups**' functional block represents the extent to which users can form communities and sub-communities. The more 'social' a network becomes, the bigger the group of friends, followers, and contacts.

There are some common features between the social networking services as defined by (Obar and Wildman, 2015):

1. Social networking services are Web 2.0 internet-based applications,

2. User-generated content is the lifeblood of social media ,

3. Users create service-specific profiles for the site or app that are designed and maintained by the SNS organization,

4. Social networking services facilitate the development of online social networks by connecting a user's profile with those of other individuals and/or groups.

Comparisons of different social networking sites in terms of their features and users' demographics such as gender, age, frequency of use and their reasons for participating in social networking sites attracted many research studies (Pempek, et al, 2009; Zywica &Danowski, 2008; Correa et al, 2010).

The case study presented by (Correa et al, 2010) investigated the relationship between three dimensions: extraversion, emotional stability and openness of the social media use on the sample of US adults, they also examined whether gender and age played a role or not. The results showed that extraversion and openness to experiences were positively related to social media use. Emotional stability was a negative predictor controlling for socio-demographics and life satisfaction, the gender and age presented another difference among personality traits. While extraverted men and women were both likely to be more frequent users of social media tools, only the men with greater degrees of emotional instability were more regular users and this may explain the differences in the ways the men and women communicate. The results were affected by age; for the young adult (18-29 years old) cohort, extraversion was the only personality predictor that was related to social media, emotional stability and openness were not significant. Extraversion was the most important predictor of social media use for young adults. For the older adult (30 and older), extraversion and openness were positively related to social media use while emotional stability was negatively associated. These case studies and definitions are fairly important for this research as they formed a pathway to focus on specific areas related to SNS and e-content to focus our contribution.

The concept of e-content can be controversial as there is no exact definition of what it is (Hanafizadeh, and Yarmohammadi, 2015). However, all the material that can be found online in different containers such as Social Networks, blogs, e-files, digital libraries and cell phones can be considered a form of e-content (Mutual, 2010). Nevertheless, social media contains large, rich and various sources and types of information that are the e-content. Non-content information such as links between items and users' ratings cannot be considered as e-content within its containers (Agichtein et al, 2008).

The transformation of e-content published online has changed dramatically over the last two decades. In the early years of the internet revolution, the content published online was very similar to traditional material, however; this has changed with the booming of social media and the involvement of the users of online publishing to encounter what is so called "user generated content" which is the domain of this research. This research investigates the user generated content and its role in shaping the available material online. The key aspect in Social Networks is that they combine the ability to generate an enormous amount of online content and at the same time bond the content with user communities, interests and perceptions (Agichtein et al, 2008).

To emphasize the previously discussed idea, Yang at al. (2015) suggest that information and content published by users in social media do differ from other communication media. Yang et al. (2015) add that the role of social media in generating e-content can be important for two main reasons; the first reasons it gives an idea of the answer for users who do not actually know what they are asking about, which make their answering hunting a little bit easier. Also, social media get together people with similar interests, which may lead to users finding the right person to answer the query faster and in detail.

An example of some case studies that discussed how e-content generated by users can have a role on e-publishing is discussed. The difference between the case studies presented and our research is the focus of our research is on the content generated by social networks as well as the focus role of the generated content rather than the physiological or psychological response of users.

The first case study presented by Bolten et al.) 2013 discussed generation Y, defined as tpersons born in the digital era and all digital components of the world have been embraced in their lives since the early beginnings. Finding of the research presented by (Bolten et al., 2015) suggests that this generation has contributed highly in generating e-content through their digital communities. They were able to produce, design, publish or/and edit content through all phases of the development of Social Networks.

The second case study presented by (Kakulu, and Dileep, 2015) focuses on the effect of "user-generated content" on postgraduate level students. The research suggested that the content generated by these users plays a prominent role in their research and development. The study that has examined postgraduate students concluded that they have become more engaged globally and more able to provide and generate meaningful content through their complex communication and interaction in different e-publishing media.

Method

This research study has fourfold purpose. First, is to explore the connectivity and communication environment for the UoJ students as per the category of student's faculty and gender. Second, to explore students familiarity with the well know Social Networks. Third, to discover the major language the students use with SNS and the friends-count they have generated on these networks. Fourth, to assess the effects of SNS on students' use of e-content in their daily life and their knowledge and satisfaction with the role of SNS in e-publishing. Each of these fourfold purposes constitute a phase on the way to reach our research objective that *SNS play a key role in e-content generation*. In all our empirical tests, the focus was on the gender and faculty categories.

For this purpose, a sample of 1,015 undergraduate students were asked to answer a set of 20 questions (see Appendix A). The researchers decided to question the maximum possible number of students in one day to avoid their effect on others and to achieve the highest level of honesty in answers. For this, a large number of university labs were used to accommodate about 1,100 students enrolled in the Social Media Networks course offered by the Department of Business Information Technology at King Abdullah II School for Information Technology. Out of the enrolled students, 1,015 properly completed the survey (Questionnaire). For the purpose of analysis, the survey questions were then grouped into four categories. Table 1 summarizes these categories, the survey questions that belong to each category, and the related hypothesis. All hypotheses are shown in Fig. 1 and all questions' texts are shown in Appendix A.

Table 1
Categories and Questions.

Hypothesis	Category	Covered in Questions
H1	Connectivity/Communication Environment	Q1,Q 2, Q10
H2	Social Networks Familiarity	Q5, Q6, Q7, Q8, Q9
H3	Language and Friends	Q3, Q4
H4	e-Content and SNS	Q11 through Q20

The study comprised students from 19 faculties of UoJ listed in Table 2.

Table 2. Students' Faculties

Faculty	Count	Percent%
Business	213	21
Foreign Languages	124	12.2
Engineering	79	7.8
KASIT	78	7.7
Dentistry	77	7.6
Arts	61	6
Education	49	4.8
Law	40	3.9
Science	39	3.8
Sharia (Religion Sciences)	38	3.7
Medicine	37	3.6
Tourism	35	3.4

Agriculture	32	3.2
Sport	27	2.7
Design and Arts	26	2.6
Pharmacology	20	2
Nursing	18	1.8
PH International Studies	17	1.7
Rehabilitation	5	0.5
Total	**1015**	**100**

Faculties are shown in descending order according to the number and percentage of students for each faculty who answered the survey. Software used for statistical analysis is SPSS Ver. 17 (SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.).

The major concern of this study was to assess the role that SNS in generation of e-content in their daily lives (H4). For this, we categorized the 19 faculties into three major categories: Humanities, Scientific, and Medical. Table 3 shows these categories along with the count of students in each category and percentages. Again, the categories are ordered in descending order based on the number and percentage of students in each category who answered the survey.

Table 3
Faculties' Categories and Counts

Faculty Category	Count	Percent	Faculty
Humanities	630	62.07	Law
			Foreign Languages
			Business
			Tourism
			Sport
			Arts
			PH International Studies
			Design and Arts
			Sharia (Religion Sciences)
			Education
Scientific	228	22.46	Engineering
			KASIT
			Science
			Agriculture
Medical	157	15.47	Medicine
			Dentistry
			Pharmacology
			Rehabilitation
			Nursing
Total	**1015**	**100.00**	

Table 3 shows students from humanities faculties constitute the largest percentage with a value of 62.07%, scientific students constitute 22.46%. The remaining 15.47% is students from medical faculties.

Figure 2 shows a summary to the count of students for different faculties' categories.
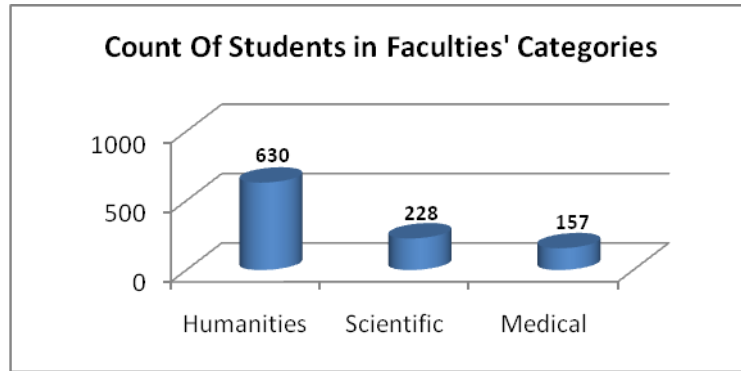
Figure 2. Count of Students in Faculties' Categories.

Results analysis and discussion

The results collected are grouped into four categories to prepare them to answer the four hypotheses mentioned in Table 3.   Each of these categories constitutes a phase on the way to reach an e-content generation. The first of these is the environment in which students connect and communicate.

Detailed results for connectivity/communication environment

The first hypothesis; H1; is concerned with questions 1, 2, and 10. We aim in H1 at showing how much UoJ students (the new generation) highly rely on new SNS technologies in connecting and communicating in their daily life. Tables: 4, 5, and 6 show the descriptive statistics to these questions, respectively. The highest value in each table is bolded and italicized to identify it.

Table 4
Q1 (Operating System Type)

OS	Count	Percent
iOS	379	37.3
Android	*507*	*50.0*
Windows	72	7.1
None	57	5.6
Total	1015	100.0

Table 5
Q2 (Communication Tool)

Tool	Count	Percent
email	43	4.2
WhatsApp	*786*	*77.4*
Viber	64	6.3
Phone calls	104	10.2
Other	18	1.8
Total	1015	100.0

Table 6
Q10 (Connection Tool)

Tool	Count	Percent
Desktop PC	78	7.7
Tablet PC	99	9.8
Smart Phone	*785*	*77.3*
Other	53	5.2
Total	1015	100.0

As shown in tables 4, 5, and 6, 50% of UoJ students use Android OS, 77.4% of them communicate via the *WhatsApp* application, and 77.3% of them connect to SNS through smart phones. These high percentages reflect how much this generation is tied to this emerging technology.

To assess the effect of gender and faculty category (Fac_Cat) on students' answers for H1, a crosstab analysis based on Chi-square is used. Tables 7 and 8 recorded the results for Q1 for both measures (Gender and Fac_Cat). The significant level is set to 5% (i.e. $p \leq 0.05$). The calculated significant value for Q1 with respect to gender is 0.05; this is the Likelihood Ratio Asymptotic Significance (2-sided) value calculated by the Chi-square tests that will be used throughout this analysis; this value indicates that gender significantly affects the answers of Q1. From Table 7, we notice that females prefer using Android OS, while males prefer using iOS, Windows, and other operating systems.

The calculated significant value for Q1 with respect to Fact_Cat is 0.000; this indicates that Fac_Cat has great significant effects on the answers of Q1. From Table 8, we notice that medical faculties are more frequently using iOS; scientific faculties use Android more frequently while humanities use windows and other OS more than other faculties.

Table 7
Answers variations to Q1 based on Gender.

			iOS	Android	Windows	None	Total
Gender	Male	Count	125	146	31	22	324
		% within Gender	38.6%	45.1%	9.6%	6.8%	100.0%
	Female	Count	254	361	41	35	691
		% within Gender	36.8%	52.2%	5.9%	5.1%	100.0%
	Total	Count	379	507	72	57	1015
		% within Gender	37.3%	50.0%	7.1%	5.6%	100.0%

Table 8
Answers variations to Q1 based on Fac_Cat.

			iOS	Android	Windows	None	Total
Fac_Cat	Humanities	Count	215	327	49	39	630
		% within Fac_Cat	34.1%	51.9%	7.8%	6.2%	100.0%
	Medical	Count	86	57	10	4	157
		% within Fac_Cat	54.8%	36.3%	6.4%	2.5%	100.0%
	Scientific	Count	78	123	13	14	228
		% within Fac_Cat	34.2%	53.9%	5.7%	6.1%	100.0%
Total		Count	379	507	72	57	1015
		% within Fac_Cat	37.3%	50.0%	7.1%	5.6%	100.0%

Combining the results for Q1, we notice that humanities males prefer using Windows, scientific females prefer using Android, and medical males prefer iOS.

A similar procedure was applied to Q2 and Q10 for both gender and Fac_Cat. Tables 9, 10, and 11 summarize the recorded results. The calculated significant value for Q2 with respect to Gender is 0.001; this indicates that Gender has a great significant effect on the answers of Q2. From Table 9, we notice that female students use WhatsApp more frequently than males but males use email, Viber and phone calls more than females.

Table 9
Answers variations to Q2 based on Gender.

			email	Whats App	Viber	Phone calls	Other	Total
Gender	Male	Count	19	225	32	39	9	324
		% within Gender	5.9%	69.4%	9.9%	12.0%	2.8%	100.0%
	Female	Count	24	561	32	65	9	691
		% within Gender	3.5%	81.2%	4.6%	9.4%	1.3%	100.0%
Total		Count	43	786	64	104	18	1015
		% within Gender	4.2%	77.4%	6.3%	10.2%	1.8%	100.0%

The calculated significant value for Q2 with respect to Fac_Cat is 0.003; this indicates that Fac_Cat has great significant effects on the answers of Q2. From Table 10, we notice that WhatsApp is extensively used by all students from all categories; however, email is not used at all by medical students in the sample while Viber is used by medical students more than scientific and humanities students. The less usage of email by medical students could be due to, their reliance on WhatsApp groups they participate in and the functionality of Viber that could compensate emails.

Combining the results for Q2, we notice that females from all faculties' categories (humanities, scientific, and medical) use WhatsApp most frequently, medical males use Viber and phone calls most frequently but they don't use emails at all.

Table 10
Answers variations to Q2 based on Fac_Cat.

			email	Whats App	Viber	Phone calls	Other	Total
Fac_Cat	Humanities	Count	31	485	34	66	14	630
		% within Fac_Cat	4.9%	77.0%	5.4%	10.5%	2.2%	100.0%
	Medical	Count	0	122	18	16	1	157
		% within Fac_Cat	0.0%	77.7%	11.5%	10.2%	0.6%	100.0%
	Scientific	Count	12	179	12	22	3	228
		% within Fac_Cat	5.3%	78.5%	5.3%	9.6%	1.3%	100.0%
Total		Count	43	786	64	104	18	1015
		% within Fac_Cat	4.2%	77.4%	6.3%	10.2%	1.8%	100.0%

The calculated significant value for Q10 with respect to Fac_Cat is 0.018; this indicates that Gender has great significant effects on the answers of Q10. From Table 11, we notice that Smart Phones are extensively used by female students; however, other devices are used more by males to connect to SNS.

Table 11
Answers variations to Q10 based on Gender.

			Desktop PC	Tablet PC	Smart Phone	Other	Total
Gender	Male	Count	36	35	233	20	324
		% within Gender	11.1%	10.8%	71.9%	6.2%	100.0%
	Female	Count	42	64	552	33	691
		% within Gender	6.1%	9.3%	79.9%	4.8%	100.0%
Total		Count	78	99	785	53	1015
		% within Gender	7.7%	9.8%	77.3%	5.2%	100.0%

With respect to the devices used by students among different faculties' categories, we found no significant difference as the calculated significant value is 0.097; a value that is more than the assumed value (i.e. > 0.05). Combining the results for Q10, we notice that Smart Phones are extensively used by female students with no significant difference between faculties' categories; however, other devices are used more by males to connect to SNS with no significant difference between faculties' categories.

To wrap this subsection up, all the above results and discussions confirm that regardless of the gender and faculty category, we notice that the UoJ students tend to rely highly on SNS as more than 77% of this generation (based on the UoJ sample) use WhatsApp and Smart Phones in their daily life; in other words, SNS are shaping how people connect, communicate and accept new technologies that extensively rely on them.

Detailed results for social network familiarity

The second hypothesis; H2; is concerned with questions 5, 6, 7, 8, and 9. Tables: 12, 13, 14, 15, and 16 show the descriptive statistics to questions 5, 6, 7, 8, and 9, respectively. The highest value for each table is bolded and italicized to identify it.

Table 12
Q5 (Pinterest)

Pinterest?	Count	Percent
Yes	216	21.3
No	799	78.7
Total	**1015**	**100.0**

Table 13
Q6 (Photos post on Instagram).

Photos on Instagram	Count	Percent
0 photos	260	25.6
1 - 2 photos	585	57.6
3 - 4 photos	97	9.6
5 - 7 photos	56	5.5
more than 7	17	1.7
Total	**1015**	**100.0**

Table 14
Q7 (SNS Daily Use).

Daily use	Count	Percent
0 hours	37	3.6
1 - 2 hours	284	28.0
3 - 4 hours	*361*	*35.6*
5 - 6 hours	205	20.2
more than 6	128	12.6
Total	**1015**	**100.0**

Table 15
Q8 (SNS Used).

SNS used	Count	Percent
Facebook	*739*	*72.8*
Twitter	146	14.4
LinkedIn	35	3.4
Google+	35	3.4
None	60	5.9
Total	**1015**	**100.0**

Table 16
Q9 (SNS Familiar With).

Familiarity	Count	Percent
Facebook	268	26.4
SnapChat	208	20.5
Tumblr	96	9.5
YouTube	90	8.9
All these	*353*	*34.8*
Total	1015	100.0

Tables 12 through 16 show 87.7% of UoJ students do not use Pinterest (Table 12); this could be due to their usage of Instagram as a replacement to Pinterest since it achieves the same purpose. Table 13 shows that 57.6% of the students post 1 to 2 photos on Instagram daily, 9.6% post 3 to 4 photos, 5.5% post 5 to 7 photos, and , 1.7% post more than 7 photos; when adding these four percentages we notice that 74.4% of UoJ students post daily 1 or more photos on Instagram. From Table 14 we see 28% use SNS for 1 to 2 hours daily, 35.6% use SNS from 3 to 4 hours daily, 20.2% use SNS for 5 to 6 hours daily, and 12.6% use SNS for more than 6 hours a day; adding these four percentages together, about 96% of students use SNS daily for 1 hour or more; this percentage reflects the fact that SNS are used extensively by UoJ students. Also, about 3/4 (72.8%) of UoJ students use mainly Facebook (Table 15) even though more than 1/3 of students (Table 16) are familiar with other SNS such as SnapChat (20.5%), Tumblr (9.5%), and YouTube (8.9%). Again, these high percentages reflect the fact that this generation is highly relying on SNS and hence, these networks must be employed properly. Table 17 summarizes the findings for Q5, Q6, Q7, Q8, and Q9 after building a crosstab analysis based on Chi-square.

Table 17
Answers variations to Q5 through Q9 based on Gender and Fac_Cat.

?	Calculated p Gender With Comments	Calculated p Fac_Cat With Comments
Q5	*Calculated p = 0.736 [not significant]* There is no significance difference between males and females (Gender) as the majority of students do not use Pinterest.	*Calculated p = 0.390 [not significant]* There is no significance difference among faculties' categories (Fac_Cat) as the majority of students do not use Pinterest.
	Conclusion: Since the majority of students do not use Pinterest, Q5 is not a deciding factor.	
Q6	*Calculated p = 0.011 [significant]* The daily percentage of photos posted daily by females who post 1 to 2 photos is 60.9%; this value is higher than that for males who have a percentage of 50.6%	*Calculated p = 0.927 [not significant]* There is no significance difference among faculties' categories (Fac_Cat) as the rate of posting any number of photos is almost the same for all categories.
	Conclusion: The rate of photos posted daily on Instagram is not a deciding factor that affects the role of SNS in shaping e-content.	
Q7	*Calculated p = 0.002 [significant]* 1. Males have higher percentage in using SNS for short time (0 – 2) hours 2. No difference in using SNS in the range 3 to 4 hours 3. Females have higher percentage in using SNS for long time (> 5 hours)	*Calculated p = 0.005 [significant]* 1. Medical students use SNS the most for long periods of time. 2. Scientific students use SNS the most for 1 – 2 hours 3. Humanities students comes the second in using SNS on average
	Conclusion: Females use SNS longer than males; especially medical female students, while males use SNS for short period of time.	
Q8	*Calculated p = 0.007 [significant]* 1. Females use Facebook the most 2. Males use Twitter the most	*Calculated p = 0.000 [significant]* 1. Humanities students use Facebook the most 2. Medical students use the Twitter the most 3. Scientific students use Google+ the most
	Conclusion: In general, Facebook is used the most. A closer look shows that humanities females use Facebook the most, medical males use Twitter the most and scientific males use Google+ the most.	
Q9	*Calculated p = 0.637 [not significant]* There is no significance difference between males and females in familiarity with SNS.	*Calculated p = 0.000 [significant]* 1. Humanities students are familiar with Facebook the most 2. Medical students are familiar with SnapChat the most 3. Medical students are familiar with Tumblr the least 4. All students are familiar with YouTube the same
	Conclusion: Regardless of gender, humanities students are highly familiar with Facebook, medical students are familiar with SnapChat but they have little familiarity with Tumblr while all students are familiar with YouTube.	

Combining the results for Q5 through Q9, we notice that even though the amount of photos posted daily is not a deciding factor, students tend to use Instagram instead of Pinterest. Females access SNS more than males' especially medical students. Facebook is used more than any other SNS. Humanities females prefer using Facebook, medical males prefer using Twitter, and scientific males prefer using Google+. Regardless of gender, all students are familiar with YouTube, humanities students are highly familiar with Facebook, medical students are familiar with SnapChat but they have little familiarity with Tumblr.

To wrap this subsection up, all the above analysis and discussions confirm that regardless of the gender and faculty category, the majority of students (74.4 %) use Instagram to post daily 1 or more photos, about 96% of students use SNS daily for 1 or more hour, about 94% of students use at least one kind of SNS, and more than 1/3 of students are familiar with more than one SNS at the same time; including the Facebook with highest percentage.

Detailed results for Language and Friends

The third hypothesis; H3; is concerned with questions 3, and 4. Tables: 18, and 19 show the descriptive statistics to questions 3, and 4, respectively. The highest value for each table is bolded and italicized to identify it. Tables 18 shows that most students (62.3%) use English language when using SNS, and Table 19 shows that the majority (about 97%) of them (calculated by adding the four percentages 14.8%, 15.9%, 23%, and 43%) have 20 friends or more. These values are other evidences that this generation uses the most common language (English) to communicate with their many friends (20 or more) via SNS; in other words, they are ready to the e-content generation.

Table 18
Q3 (Language)

Language	Count	Percent
Arabic	383	37.7
English	*632*	*62.3*
Total	1015	100.0

Table 19
Q4 (Friends Count).

Range	Count	Percent
Less than 20	35	3.4
20 to 50	150	14.8
50 to 100	161	15.9
100 to 200	233	23.0
More than 200	*436*	*43.0*
Total	1015	100.0

Again, to assess the effect of gender and faculty category (Fac_Cat) on students' answers for H3, a crosstab analysis based on Chi-square is used. Table 20 summarizes our findings.

Combining the results for Q3 and Q4, we notice that most students use English language, and this is not a significant factor. As for the amount of friends, males tend to have more friends than females, especially those from scientific faculties, but medical females tend to have limited number of friends, however, when the number of friends is in the range 100 to 200, we found no difference between all faculties' categories.

To wrap this subsection up, all the above analysis and discussions confirm that regardless of the gender and faculty category, English language is the major language used by UoJ student and that almost every student has at least 20 friends. When counting the number of friends, it was noticed that males tend to have more friends than females, we notice the big number of friends (relations) in the scientific faculties, and we notice the limited number of females relations in the medical faculties; this fact is expected since the majority of females in this society keep their relations very conservative especially with males. However, when a student has 100 to 200 relations, we were not able to find a clear difference between all faculties' categories.

Table 20
Answers variations to Q3, and Q4 based on Gender and Fac_Cat.

Question	Calculated p Gender with Comments	Calculated p Fac_Cat with Comments
Q3	*Calculated p = 0.153 [not significant]* There is no significant difference in gender as the percentages are close to each other for males and females.	*Calculated p = 0.279 [not significant]* There is no significant difference in Fac_Cat as the percentages are close to each other for all faculties' categories.
	Conclusion: Even though most students use English, the language is not a deciding factor as all groups have almost similar percentages.	
Q4	*Calculated p = 0.014 [significant]* 1. Males percentage who have more than 200 friends is 46%. 2. Females percentage who have between 100 to 200 friends is 25%.	*Calculated p = 0.036 [significant]* 1. Medical students' percentage who have between 50 to 100 friends is the highest with about 25%. 2. Scientific students' percentage who have more than 200 friends is the highest with about 48%. 3. There is no difference between the percentages of faculties' categories who have friends between 100 and 200.
	Conclusion: Males tend to have more friends than females, especially those from scientific faculties. Also, medical students tend to have limited number of friends, at the same time there is no difference between all faculties' categories when the number of friends is between 100 and 200.	

Detailed E-Content and SNS

For the last hypothesis: H4 (questions 11 through 20), we followed Bloom's taxonomy of educational objectives (Bloom, and Krathwohl, 1956) in order to categorize the different levels of students' knowledge in e-content generation.

Each of the questions from 11 to 20 has 5 answers (Likert scale); Table 21 summarizes the answers and the weight on each one.

Table 21
Answers Weights

Answer	Weight
Strongly agree	5
Agree	4
Neutral	3
Disagree	2
Strongly disagree	1

The significance level is set as before to 5% (i.e. $p \leq 0.05$). The *grand average weight* (***gaw***) for all answers is 2.5; it is calculated as the summation of all weights then divided by their count; i.e. *gaw = (5+4+3+2+1)/5*. When *gaw* is equal to or above 2.5 *(of course while $p \leq 0.05$)*, it indicates a satisfaction level, however, when *gaw* is less than 2.5, it indicates that students are not satisfied. We cannot draw any conclusion when $p > 0.05$.

Following Bloom's taxonomy, we categorized students' satisfaction about e-content into three categories: Low, Medium, and High; based on the satisfaction percentage (*sp*) as indicated in Table 22.

Table 22
Answers Weights

Category Name	Category Value	Satisfaction Percentage (*sp*)
Low	1	Between 20% and 50%
Medium	2	Between 50% and 75%
High	3	Between 75% and 100%

Since we have 10 questions, the weight on all questions will range from 10 to 50.

The minimum *sp* value is 20% calculates as:

$$Minimum\ percentage = 10\ x\ 1\ /\ 50\ = 20\%,$$

where 1 is the weight on "Strongly disagree" answer.

The maximum *sp* value is 100% calculated as:

$$Maximum\ percentage = 10\ x\ 5\ /\ 50\ = 100\%,$$

where 5 is the weight on "Strongly agree" answer.

We created a new column in the data to hold satisfaction percentage and we called it *sp*. The *sp* value is calculated by summing up the answers to the 10 questions (Q11 through Q20). The average satisfaction percentage (*asp*) for the 1015 students is calculated as:

$$asp = \frac{\sum_{k=1}^{1015} sp}{1015}$$

We added another column to the data that we called *sp_level* to represent the numeric value that is equivalent to the calculated *asp* value; see Table 22. Table 23 shows a summary of the statistics for data. It can be seen from Table 23 that the calculated *asp* value is 75.09, this value when compared with what we assumed in Table 22, it lays in the High category; i.e. students are highly satisfied with the hypothesis that SNS play a key role in e-content generation that the 10 questions are carefully prepared to test at a low standard error with a value 0.337; see Table 23.

Table 23
sp Statistics.

Mean	75.09
Std. Error of Mean	.337
Median	76.00
Std. Deviation	10.731
Range	80
Minimum	20
Maximum	100

In Table 24, we summarized the findings that are related *sp_level*. As can be seen from Table 24, the mean is 2.54 (out of 3; the three category levels) at a standard error of 0.017, and the median is at the maximum value, something that is highly reflective.

Table 24
***sp_level* Statistics.**

Mean	2.54
Std. Error of Mean	.017
Median	3.00
Std. Deviation	.540
Range	2
Minimum	1
Maximum	3

Before concluding this section, we summarized in Table 25 the descriptive statistics to sp_level. *The table shows that 56.6% of students' answers are in the "High" level of satisfaction and 41.3% are at "Medium" level; when adding these two percentages together, we notice that about 98% of students are satisfied with the hypothesis (H4).*

Table 25
Answers Weights

Category Name	Count	Percentage
Low	22	2.2
Medium	419	41.3
High	574	56.6
Total	1015	100.0

The authors feel that H4 is achieved at a high level that no further crosstab analysis is needed to measure the variations in answers of Gender and Fac_Cat as the dominant factor here is the satisfaction regardless of Gender and Fac_Cat.

Conclusions

In a sample of 1015 UoJ students, we found many evidences that this generation is an e-content contributor, that is highly relying on SNS. The results indicated that regardless of the sample gender and faculty category, the following findings are recorded: (1) 77% of students use WhatsApp and Smart Phones to communicate and connect with others in their daily life, (2) 74.4% of students use Instagram to post daily 1 or more photos while about 96% use SNS daily for 1 or more hour, (3) about 94% of students use at least one kind of SNS, and more than 1/3 of students are familiar with more than one SNS at the same time; including the Facebook with highest percentage. (4) For the language and counts of friends, we found that English is the major language used by UoJ student and that almost every student has at least 20 friends; males tend to have more friends than females, we notice the big number of friends (relations) in the scientific faculties, and we notice the limited number of females relations especially in the medical faculties; this fact is expected since the majority of females in this society keep their relations very conservative especially with males. However, when a student has 100 to 200 relations, we were not able to find a clear difference between all faculties' categories. (5) The authors feel that SNS have a great impact on shaping e-content generation as 56.6% of students are highly satisfied, 41.3% are moderately (at "Medium" level) satisfied; i.e. about 98% (56.6% + 41.3%) of students are satisfied with the hypothesis that sates: SNS has a great impact on shaping e-content generation; regardless of the gender and faculty category.

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Appendix A
Survey Questions

No.	Question Text	choice1	choice2	choice3	choice4	choice5
1	What type of operating system is installed on your cell phone?	iOS	Android	Windows	None of these	
2	Which of the following you use the most to communicate with your friends?	email	WhatsApp	Viber	Phone calls	Others line Tango and Line
3	What language you use mostly with social networking?	Arabic	English			
4	About how many friends; in total; you have on social networks?	<20	20-50	50-100	100 - 200	> 200
5	Do you use Pinterest?	Yes	No			
6	How many photos you post daily on Instagram?	I don't use Instagram	1 to 2 photos	3 to 4 photos	5 to 7 photos	more than 7
7	What is the daily average number of hours you spend using social networks?	I don't use social networks at all	from 1 to 2 hours	from 3 to 4 hours	from 5 to 6 hours	more than 6 hours
8	Which of the following social networks you use more than others?	Facebook	Twitter	LinkedIn	Google+	None of these
9	Which of the following social networks you are familiar with and use even if at low rate?	Facebook	SnapChat	Tumblr	YouTube	All these
10	Which of the following you use to connect to social networks?	Desktop computer	Table PC	Smart Phone	other	
11	I think social networks helped in producing more than e-content and the dissemination of publications faster and efficiently	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
12	Social networks gave me the opportunity to work with blogs and access e-books	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
13	Social networks have become a way to devote significant connections that change normal relations into loyalty relationships with publishers	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
14	Social networks raised the competition between publishers and this is reflected directly on the benefit of social networks users	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
15	I think social media helped in reducing the usage of papers and made people act better?	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
16	I highly encourage others to exchange publications on social networks and encourage them to electronically publish on social networks	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
17	I prefer reading material using social media networks rather than from printed documents	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
18	I think the intensity of Arabic publications on social networks are few when compared with its English counterpart	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
19	Social networks help me to stay up to date with scientific development and cope with them smoothly	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
20	Social networks help me communicating with the search team and access to researchers with a common interest	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree

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Editor's Note: With proper support, transition to blended e-learning can add quality and flexibility to education programs. Well-trained and enthusiastic teachers with excellent resources, technical and administrative support can move programs rapidly into 21st century where learners assume greater responsibility for their own learning and where the teacher can better support individual student needs.

Exploring the affordances and obstacles of blended e-learning pedagogical practices: perspective of Malaysian teachers

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Abstract

In Malaysia, blended e-learning pedagogical practices have made a very rapid penetration into Malaysian schools. However, there is little Malaysian studies on the affordances and obstacles of blended e-learning. This study examines and understands the affordances and obstacles of using Blended E-Learning Practices (BeLPs) and develops change actions that can lead to better use of BeLPs. A total of 27 practicing teachers were involved in this study. A phenomenological perspective was employed for this study. In-depth interviews with participating teachers was carried out to understand their perceptions on the usage of BeLPs. A majority of them agreed that there are many practical advantages to teach and learn using BeLPs. Significant affordances are to encourage active learning, improve motivation, and encourage authenticity and connectedness. This report also revealed the impact of teachers' and students' readiness to blended e-learning, technical infrastructure, support and environments towards the process of implementation of BeLPs.

Keywords: Learning Management System, Moodle, technology integration, educational technologies

Introduction

The integration of Information and Communication Technology (ICT) in education is no longer a new matter in today's sphere. It is an ever-growing effort by many faculties to ensure success by integrating two elements, technology and education, to create more efficient and effective learning. Teaching and learning have been made simpler than ever before by integrating communications media to expand opportunities for interaction between teachers and students at schools in a very advanced way without difficulties, especially with the introduction of blended e-learning.

Blended e-learning pedagogical practices are increasingly more prevalent in Malaysian classrooms. Blended e-learning is accomplished with the help of many different types of applications such as WebCT, Blackboard and Moodle. Integration of ICT becomes easier with those applications. Moodle, for example, a free open source application, is preferred by many teacher educational institutions, universities and colleges throughout Malaysia. ETutor, Claroline, eFront and Joomla are some of the open source applications that have been adopted in teaching and learning.

It is noteworthy that blended e-learning is able to improve student's motivation, achievements and create fun learning (Escobar-Rodriguez & Monge-Lozano, 2012; Katsamani, Retalis, & Boloudakis, 2012; Lu & Law, 2012; Poelmans & Wessa, 2013). In addition, teaching and learning technologies have made the process more flexible and innovative (Vogel & Klassen, 2001; Wong, Pauline & Osman, 2013) and at the same time make lessons more interesting for the learners.

The study

The large-scale introduction of blended e-learning into primary and secondary schools in Malaysia attracted researchers to conduct this research project. There are important pedagogical issues surrounding how teachers can prepare lessons using available software and how they can use the interactive features of the blended e-learning to deliver concepts in ways that can be dramatically more effective. This paper seeks to contribute to the debate about the use of Blended E-Learning Practices (BeLPs) via Moodle as a Learning Management System (LMS) which focuses on particular affordances and obstacles in integrating it in daily teaching and learning.

Unfortunately, blended e-learning practices, especially using Moodle as a tool for collaborative learning, knowledge building and interactive communication, have not been widely implemented in developing countries. It is time to focus on how teachers can exploit the technical interactivity of the use of BeLPs via Moodle to support dialog and interactive media to bring multimodality and interactivity to support teaching and learning. On this basis, finding would highlight affordances and obstacles that can develop better teaching and learning practices by increasing interactivity, collaboration and classroom participation.

In short, the main intention of this study was to understand the benefits and obstacles of teaching via BeLPs with the help of Moodle as a Learning Management System. Knowing best practices for blended e-learning used in schools can facilitate adoption by moving beyond simplistic arguments around whether the new pedagogical practices are 'good' or 'bad' for the transfer of knowledge, skills and attitudes to learners. This study also intends to determine the most effective and efficient ways to provide optimum conditions for improving engagement levels and implementation of BeLPs in daily teaching and learning among students.

Participants and data collection methods

BePLs are a relatively new teaching tool in Malaysian schools. In this regard, a small scale case study was carried out to understand the affordances and obstacles of blended learning practices using Moodle in teaching and learning. Based on recommendations from academicians, this study invited 27 practicing teachers from primary and secondary classrooms who were satisfied two criteria for this study. First, participating teachers must have experience with BePLs for more than one year for teaching and learning in schools. Second, they must be appointed as permanent teachers by the Malaysia Ministry of Education (MoE). Teachers waiting for confirmation were not eligible for this study. These criteria were considered appropriate and relevant for the context of this study. Teacher participation was wholly voluntary. Both open-ended and predetermined interview questions were adopted and/or adapted from previous studies (Escobar-Rodriguez & Monge-Lozano, 2012; Katsamani, Retalis, & Boloudakis, 2012; Lu & Law, 2012). Face and content validities were determined by a five-expert panel before the actual study.

In the data collection process, in-depth interviews were carried out with each of the 27 participating school teachers (11 from Primary and 16 secondary). Five (5) open-ended and two (2) predetermined questions aimed to explore affordances, pedagogical practices and challenges related to teaching with BePLs. Audio recordings were made of these interviews. No video recordings were made throughout this process. Pseudo-names have been substituted for all participants (teachers) through the writing and reporting of the research project. The steps for qualitative data collection and analysis were, thermalizing[1], designing, interviewing, transcribing, analyzing, verifying and reporting (Kvale & Brinkmann, 2008).

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[1] Thermalizing is a rigorous design methodology to ensure the research is trustworthy by accurately examining the phenomenon intended for study and by eliminating bias.

Ethical considerations

This study was conducted according to the protocol of the ethical research set by the University and with the approval from the Ministry of Education. Informed consent and confidentiality are important issues. All measures were taken to preserve confidentiality and consent of all participants. Informed consent was given by all participants; there was no deception or secrecy; all volunteer teachers knew they were participants in the research.

The consent process ensured that participating school teachers and those authorized to give consent comprehended the information provided and can made a voluntary choice whether to participate or not. Also, they were able to withdraw at any time. Prior to the research, approval was obtained from the Education Planning and Research Division (EPRD). Upon receiving approval from the EPRD and University to support this research, the head of school was contacted and permission granted before conducting the research. This procedure ensures the research project will not burden, inconvenience or disrupt participants. Researchers strongly believe that student learning is a priority and interaction among them or with their teachers must not be compromised.

The Consent Information Sheet was sent to the participating teachers. This was to ensure participants understood the objectives and structures of this study. The Consent Information Sheet outlined the research title, researchers' information, and objectives and structures of study. It was made available prior to conducting the research. Participating school teachers were requested to sign the consent form and it was collected by the researchers within a week.

Results and discussions

Advantages of Blended E-Learning Practices (BeLPs) in teaching and learning

In the interview, participants were asked to reflect on their experiences with the Blended E-Learning Practices (BeLPs) for teaching and learning among school teachers. The findings highlighted the affordances of Blended E-Learning Practices (BeLPs) for teaching and confirmed the previous studies.

Encourage efficiency and effectiveness

Many of the teachers interviewed saved their teaching materials to hard disk or USB stick and subsequently be revised and reused hem in coming lessons, especially for students who need recall what was taught in the classroom. This adds immediate benefit during the course of the lesson because students can revise or return to earlier explanations for reinforcement purposes by visiting Blended E-Learning E-Learning Practices (BeLPs) website. Indeed, the extra information that has been added during the lesson can act as an invaluable prompt or source of ideas at some future date. A teacher mentioned how she could easily bring the previous saved activities or notes or lesson plans into her current teaching lesson again without any hassles by using Blended E-Learning Practices (BeLPs).

Furthermore, many of the teachers interviewed noted that they could use the Blended E-Learning Practices (BeLPs) website to introduce their teaching lesson. This is because the information uploaded to the website can be used to recall or reflect on what was previously taught at the beginning of the next lesson. Both teachers and learners can use the website address to link to the teaching materials for extra information or concepts. By having these, students not only study based on the entire notes or information or activities provided by teacher but also from related and useful websites. The interviewed teachers agreed that teaching is more fun when students are able to link to their discussions with the latest information from the related websites. Blended E-Learning Practices store information including lessons, student records and progress reports; it saves paper and minimizes physical data storage. It makes the learning process cost efficient, more organised and saves time.

Encourage active learning among students

Many studies have proven that traditional pedagogies are the primary mode of instruction despite a variety of ICT options for optimal student learning (Feden & Vogel, 2003). Interviewed teachers revealed that the majority of teachers opt for passive lecture-discussions rather than an active learning strategy. Knowledge acquired through direct instruction in a typical learning environment leaves students to be passive; interactive classroom practices require more working on individual tasks. Passive learning-teaching pedagogical practices should be changed to suit the current environment and needs of our societies.

Teacher-centered pedagogy is still dominant in developed countries. A study conducted in American classrooms from 1880 to 1990 found that the basic instructional sequences and patterns in high schools, particularly in core academic subjects, have remained teacher-centered (Feden & Vogel, 2003). Similarly, based on an extensive study of schooling by John Goodland in 1983; it was found that "teachers appear to teach within a very limited repertoire of pedagogical alternatives emphasizing their own talk and the monitoring of seatwork which places the teacher very much in control" (1983, 467). It seems difficult to break the cultural norm rooted within the teaching process if no immediate and constant awareness is initiated.

A teacher prompted that having Blended E-learning Practices (BeLPs), students are actively constructing their own understandings and encourage social cooperation with others. Another teacher prompted that after having Blended E-Learning Practices (BeLPs) for weeks, his students have changed in the way they learn. They adopt a more holistic learning style. Before this, they were much more on an additive process for accumulating information. He noted that Blended E-Learning Practices (BeLPs) emphasise bringing about learning more than providing instruction.

The findings from this research are in line with the Bloom's taxonomy concept of learning. By having Blended E-Learning Practices (BeLPs), students are able to achieve higher order thinking skills if compared to the process of transmitting knowledge which only occur through teacher-centered approach. Interviewed teachers also noted that Blended E-learning Practices (BeLPs) based on contemporary cognitive theory encompasses higher order thinking skills, and embrace Dale's *cone of learning* where the active engagement in the learning can help to retain 30% to 90% of knowledge and information.

All interviewed teachers believed that the advancement of technology has shaped changes within the organizational infrastructure; higher levels of learning - creative thinking, problem solving, and decision making - are highly demanded in the present workforce. In conjunction with this, under ideal circumstances, teachers suggest that Blended E-Learning Practices (BeLPs) allow practitioners to match technology, pedagogy, and content to the specific needs of different learners and to the peculiar demands of different contexts.

Thus, the pedagogical decision to incorporate cooperative learning within the context of blended learning is a significant decision where the learning process is based on learning theories and primary studies documenting a positive effect on student performance, motivation and learner autonomy. Interviewed teachers' opinions are in line with Mishra & Koehler (2006).

Encourage motivation in learning

All interviewed teachers have agreed that Blended E-Learning Practices (BeLPs) able to increase the level of motivation among their students. After using BeLPs, students react actively to the classroom environment. This is in line with many previous studies that noted that ICTs could encourage and actsas a motivator and be a power tool in teaching and learning (Escobar-Rodriguez & Monge-Lozano, 2012; Katsamani, Retalis, & Boloudakis, 2012; Lu & Law, 2012; Wong, Sahandri, & Pauline, 2016). One teacher viewed BeLPs able to encourage constructive learning among students, especially interactive via e-forum, e-chat and others synchronous

features. If a certain degree of motivation in students is aroused, there is much potential in gaining more confidence thus unleashing greater possibilities in study. Furthermore, they become active because such learning is inherently interesting or enjoyable.

Another teacher speculated that by blending pedagogical practices, eliciting motivation is highly possible through the use of the power tool (computer) and conventional approach (face-to-face). All of this is possible in establishing positive interdependence among group members as well as individual accountability, where all team members work together to complete common shared goals. As mutual understanding exists within each member, the contribution and recognition given to effort put in can internally encourage such desired motivation (Slavin, 2014).

Based on the Sloan-C Five Pillars by Lorenzo and Moore (2002) for Quality Online Education, blended e-learning has the capability to make education more efficient, cost-effective, accessible, and increase satisfaction. Lajbcyier and Spratt (2007) explored the role of discourse in text-based computer conferencing environments to develop critical thinking and other desirable cognitive skills in learners. Anderson, Rourke, Garrison and Archer (2001) support the idea that learners are able to project themselves socially and affectively into a community of inquiry. Students are allowed to learn in their own way to determine their own path through the material available (Wong, Teo, & Goh, 2014; Wong, Sahandri, & Pauline, 2016). This supports the recent School Based Assessment being practiced in the nation where students depend on a self-paced learning progression where those who excel move up to a level. Thus, the proposed LMS/Virtual Learning Environment (VLE) will facilitate learning and help teachers to track, monitor, document and allow students' assessment to be more organised and manageable.

Encourage learner autonomy and self-directed studying ability

Many interviewed teachers indicated that BeLPs is able to increase level of learner autonomy and a self-directed studying ability. They found that after integrating BeLPs, their students were able to acquire subject consciousness and self-awareness which stimulated passion, enthusiasm, and giving increased effort in initiating one's own learning process. Additionally, one of the interviewed teachers voiced out that from a humanistic point of view, the primary function of education is to assist learners to develop individuality and help them to realize the potential that already existed within them. This is in line with Liu's (2012) view point.

The findings of this study also support the outcomes of Benson (2001). Benson distinguished six approaches to assist development of learner autonomy which incorporates resource, technology, learner, teacher, classroom and curriculum-based approaches. Resource-based approaches emphasize the independent interaction of students with the learning resources where learners choose their own educational materials evaluate their own language progress. Meanwhile, technology-based approaches are interconnected with the use of computers, specifically internet, where learners interact closely with educational technologies. This approach is another basic exemplar that supports the integration of blended learning within study, making it relevant to the current needs in language learning. Another approach to assist development of learner autonomy is the learner themselves. Through a learner-based approach, students view the process of learning through reflection on learning materials and activities. Finally, with regard to teacher, classroom and curriculum based approaches; students are free to decide on their own learning content and sequence within a collaborative and supportive environment.

Many of the teachers interviewed revealed that the effectiveness of online resources to develop learner autonomy, involving innovative treatment in the form of a online resources, not only contributed to larger pronunciation gains but in fact produced more autonomous learners. Learning autonomy involves directing learners to take full responsibility for their own learning. A teacher's role is to facilitate the process by guiding the students in what is meaningful, and how and when to utilize it in creating a purposeful learning atmosphere.

Challenges in implementing blended e-learning practices (BeLPs) and corrective suggestions

Few pedagogical challenges were noted for using Blended E-Learning Practices (BeLPs) in teaching and learning in this study based on teachers' point of views. Among them were teachers' and students' readiness, technical infrastructure and support, and environment.

Teacher and student readiness

A growing body of research suggests that effective and efficient practices for preparing teachers to use technology were a vital determinant in the process of technology integration in teaching and learning. Using Blended E-Learning Practices (BeLPs) requires both new approaches to pedagogy and professional development for teachers. Successful integration of any technology into the classroom requires more than simply acquiring that technology. Having that, proficiency in developing and integrating Blended E-Learning Practices (BeLPs) has therefore been widely considered by interviewed teachers.

Indeed, the introduction of the Blended E-Learning Practices (BeLPs) does not in and of itself transform existing pedagogies (Wong, Teo, & Goh, 2013, Azli, Wong & Noraini, 2016; Wong, Sahandri, & Pauline, 2016). Blended E-learning Practices (BeLPs) requires an investment of time, and some degree of training. Various articles and reports have highlighted the impact of low teacher confidence with ICT and how it hinders usage of information and communication technology tools for teaching and learning. All interviewed teachers agreed that teaching staff lacking in subject matter skills may also lack methodological proficiency, so that integration of blended e-learning pedagogical practices will add existing burdens to them (teachers).

With regard to training interviewed teachers serving in highlighted schools should conduct training on a regular basis. This weill enable experienced teachers to share their knowledge and skills in the use of Blended E-Learning Practices (BeLPs) with novice teachers. Furthermore, one of the teachers voiced that the successful introduction of blended learning in a school needs strong and enthusiastic leadership from the head of the school in order to achieve higher confidence and belief in the use of new blended pedagogical practices. One teacher voiced that barriers that hold teachers from integrating technology into the classrooms are lack of access to computers and software, insufficient time to plan instruction, inadequate technical and administrative support, negative beliefs or ignorance about teaching and computers, established classroom practices, and unwillingness to change. Even if a school had enthusiastically participated in the reform effort to integrate technology in education, curricula, instruction and assessment should be interrelated to each other in making it a success.

In the Malaysian schools, especially in the rural areas, lack of knowledge and skills in the use of Blended E-Learning Practices among students could be the main barrier to success in implementation of the new pedagogical practices. Students should be informed on the benefits of using blended e-learning and understand its actual benefits. Encouragement from teachers and head of school is vital in ensuring that they (students) are conscious why they need to use blended e-learning.

Self-directed e-learning is not likely to be successful for students who are not be able to handle independent learning throughout the course. Interviewed teachers contended that in fact, some learners who lack the skills of independent learning may find this difficult and become confused. Many will still need guidance and support from teachers to use blended e-learning in their daily learning. Another teacher noted that not all students are able to appreciate flexibility and freedom offered by the Web and human factor is therefore inevitable. Even worse, students might feel isolated, lack of motivation, or lack of support and feedback if blended e-learning instruction is to be implemented without proper planning and support.

Training for the head of school is vital to ensure that they understand the advantages of using technologies in teaching and learning. Sufficient information and knowledge among the head of school, administrators and teachers will give extra points to solve problems, provide support, and give feedback or guidelines for teachers and students. Since benefits of ICT in education are undeniable, if it is used to its fullest potential, it will open up opportunities to create indispensable learning autonomy and flexibility in the new classroom.

Interviewed teachers suggested that pre-test and post-test are essential in blended training programs. The pre-test would benefit the programs in that it could instill better plan for the Blended E-Learning Practices training content preparation, especially papers related to technology integration, instead of replicating knowledge and skills the students already possess. By identifying teachers' needs, the blended training programs will be more beneficial to teachers. Also, the post-test might be able to indicate the effectiveness and efficiency of the technological in-service teacher development programs. Furthermore, the training programs for teachers or other professional development courses should not focus only on providing teachers with knowledge to design, use and integrate Blended E-Learning Practices. They should include more affective (attitude) and psychomotor (skills).

Technical infrastructure and support

Interviews noted that, especially in the early implementation stage, teachers might resist integration of Blended E-Learning Practices (BeLPs) if they are having difficulties in the use of the new technologies for teaching and learning. Arising from this barrier, technical support has become vital to encourage them to keep trying. On-site technical support is responsible for troubleshooting and assistance for the technology and lessons. Increased use of technology in the school requires a robust technical infrastructure and adequate technical support. If teachers are working with a technology infrastructure that realistically cannot support the work they are trying to do, they will become frustrated and turn back to the conventional teaching tools such as blackboard or flash cards. Teachers also must have access to on-site technical support personnel who are responsible for troubleshooting and assistance after the technology and lessons are in place. Based on Wong, Osman, and Goh (2012) findings, technical support in implementing computers in teaching and learning became a very significant factor among users.

Besides that, many interviewed teachers have voiced out that the number of computers in their school computer labs was insufficient. Lack of equipment could be construed as a barrier for teachers and students in using of Blended E-Learning Practices or attempting to integrate them in creative and innovative ways.

Conclusions

The overall views of the participating school teachers were extremely positive about the use of Blended E-Learning Practices (BeLPs) in teaching and learning. All of those who were part of this study reported a considerable enthusiasm for the Blended E-Learning Practices (BeLPs) and argued that the nature of their teaching had changed since the introduction of BeLPs. These summarized that teaching with new digital tools will enhance teaching and learning in the digital age. It is important to realize that using the BeLPs on its own will not provide any magic solutions, nor should teachers feel obliged to use the blended learning in every part of a lesson, or indeed in every lesson. Sometimes the blended learning pedagogical approaches might only be used for a starter or a plenary.

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Fostering teaching excellence through first year distance and flexible learning education: a study of 12 pacific island countries

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Fiji

Abstract

A student encounters a number of problems and challenges while managing life as a first year student in higher education institutions. First year student's require special guidance and support from the university system so that they are able to effectively adjust to the changes in their education and personal life that they will be facing as university students. Against this backdrop, the main purpose of this paper is to examine the benefits of the First Year Experience Programme to the first year distance and flexible learning students at the University of the South Pacific. This study has implications for the policy makers who make policies for higher education governance in the Pacific Island countries and around the globe.

Keywords: First year student, student development theory, University of the South Pacific, higher education.

Introduction

There has been increasing discussion in the literature on how higher education institutions could retain students, particularly, in the first year. Many studies have confirmed that adjusting to the first year of academic life is a challenging task for first year students (Read *et al.,* 2003; Van der Meer *et al.*, 2010). Higher education institutions have designed numerous programs to help students to easily adjust to the university style of delivering education. For instance, the University of the South Pacific designed numerous programs for first year students including the First Year Experience program, Mentoring or Buddy First-Year Seminars, orientation programs, etc. These programs have helped first year students to quickly adjust to the university environment.

The main purpose of this paper is to examine the benefits of the First Year Experience Program to University of the South Pacific students studying in the twelve Pacific Island Countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. There are numerous first year programs offered by the University of the South Pacific but there are two reasons for choosing the First Year Experience Program for this study. First, the First Year Experience coordinator works closely with the distance and flexible learning coordinators to help students from the twelve Pacific Island countries. Second, the benefits from the First Year Experience Program are clearly visible from the progress that students are making in their studies.

This study was conducted for two reasons. First, to the best of our understanding, none of the existing studies have explored the benefits of the First Year Experience Program to the first year students at the University of the South Pacific. This is a pioneering study that explores the benefits of the First Year Experience Program and the intervention mechanisms used by the First Year Experience coordinator to provide support to the first year students at the University of the South Pacific. Second, this study advances the Student Development Theory by examining how students are able to develop their cognitive and intellectual capability when they are provided support from the First Year Experience program.

This paper is structured into eight sections. Section two presents an overview of the First Year Experience program at the University of the South Pacific. Section three provides the theoretical framework related to the first year student support program. Section four reviews the literature and section five provides the research methodology. Section six outlines the research findings and discussions. Section seven presents theoretical contributions of this study and section eight provides conclusion and directions for future research.

The next subsection will provide an overview of the First Year Experience program at the University of the South Pacific.

Overview of first year experience programme at University of the South Pacific

The University of the South Pacific is a regional university that is headquartered in Suva, Fiji Islands. This university serves twelve Pacific Island countries and these countries are the Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. The University of the South Pacific was established in the year 1968, collectively by the twelve member countries. There are three important faculties at the University of the South Pacific and these three are the Faculty of Arts, Law and Education, the Faculty of Business and Economics, and the Faculty of Science, Technology and Environment (University of the South Pacific, 2017).

The First Year Experience Programme was set up in the year 2015 to help the first year distance and flexible learning coordinators to effectively manage the difficulties that the first year coordinators were facing while delivering the first year distance and flexible learning courses. New students face numerous problems while transiting from their high school education to the university studies. There are a number of objectives of the First Year Experience Programme at the University of the South Pacific. Some of these objectives are to help the first year students to adapt to changes in their university life via attending workshops and through effective intervention mechanisms. Figure one shows the areas in which the First Year Experience Programme coordinator provides workshops for the first year students.
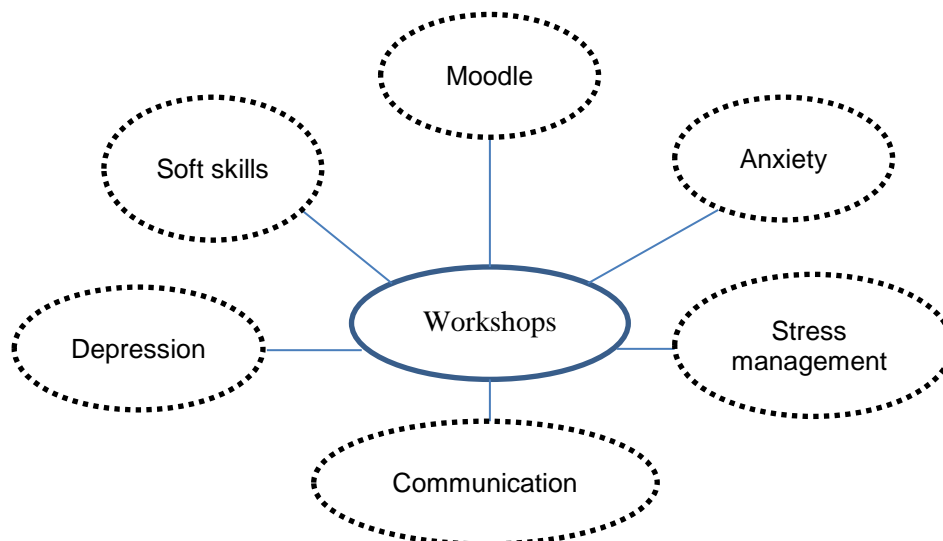
Figure 1: Workshops for the first year students provided by the first year experience program coordinator

Source: Created by the authors (2016) by using information from the University of the South Pacific (2017)

Theoretical framework related to first year students support

The first year students at any tertiary institution are the most vulnerable students who need constant guidance from various entities within the university to help them to progress in their studies. The conventional way of delivering higher education courses is markedly different from the way education is delivered in the modern era (Hassan et al., 2014). Traditionally, American universities used to focus on delivering lectures face-to-face where the lecturer was the focal point of delivering course related information to students. However, with the rapid globalization of technology, courses in higher education are now delivered in different ways to delivery in the early 20th century (O'Neill, 2012). Due to changes in the way higher education is delivered, universities have to come up with programs and schemes that will help students to effectively adopt new teaching methods used by higher education institutes (Tadaki and Tremewan, 2013; Noaman et al., 2017).

There are theories that explain student development in tertiary studies and one of the most common theories that can be integrated with the first year student learning is the 'Student Development Theory' (SDT). This paper utilises the Student Development Theory' to analyse the First Year Experience Programme at the University of the South Pacific. The discourse of studies on the 'Student Development Theory' can be linked to transition in the provision of college education in the American higher education universities (Baker and Lattuca, 2010; Done and Knowler, 2013; Pavan, 2013). The Student Development Theory is divided into four categories (Skinner, 2009; Hadley, 2011; Long, 2012). These four categories are (1) psychological theories, (2) cognitive and moral development theories, (3) typology theories, and (4) person-environment theories.

Psychological theory of student development

This theory examines how the learning behaviour of individuals develop as their personal and interpersonal lives change (Nielsen et al., 2016; Aljohani, 2016). A student is always subject to personal, emotional and interpersonal changes in their student lives and it is these changes that affect the way first year students learn in the university setting. In all university settings, there are student counselling centres available that provide counselling services to students.

Cognitive and moral development theories

According to this theory (Quinlan, 2016), a first year student grows cognitively and intellectually, therefore, universities have programs that provide the first year students with technical skills.

Typology theories

These theories examine how individual differences in the first year students relate to the world around them.

Person environment theories

This theory examines how students interact with the environment around them (Durning and Jenkins, 2005). A first year student will be faced with the totally new learning environment once they start their university studies. The environment at the university is different from the high school. In modern student learner-centred universities, students have to manage their own time effectively and study as an independent learner.

Out of these four categories of the Student Development Theory, this study specifically uses the Cognitive and Moral Development School to explain how students in the first year distance learning courses are able to benefit from the First Year Experience program at the University of the South Pacific. There are two reasons for using the Cognitive and Moral Development School of the Student Development Theory. First year students at any higher education setting need skills to effectively organize their time and educational commitments in order to meet the

demands from each course. According to the Cognitive and Moral Development theories, first-year students need help and support to reinforce their cognitive and intellectual skills (Quinlan, 2016). Therefore, the Cognitive and Moral Development theories provide the best fit for issues dealt with by the First Year Program Coordinator at the University of the South Pacific. Second, the psychological theories deal with the counselling services provided by the University of the South Pacific, The third and fourth school of thought on the Student Development theory examines how the first year student is able to link to the environment. Therefore, these theories are not directly related to the types of activities provided by the First Year Student experience program. The First Year Student Experience program provides a support system for course coordinators to effectively manage at risk students.

Literature review

Students engaged in first year studies encounter numerous challenges whilst undertaking their studies (Koivuniemi et al., 2017). Development of first year experience program supports students by preparing them for academic success (Bouillon, 2015). Research investigations regarding first year in tertiary education have highlighted the necessity to offer transitional support in the first year of study (Stagg and Cummins, 2014). Remarkably, Maunder et al. (2013) found a novel method of examining transition is by designating students as researchers. The significance of utilizing students as researchers or investigators presents genuine access to the voices of students. Furthermore, Knoblach and Whittington (2003) reported a study in the USA, whereby new teachers noticed a reduction in teacher effectiveness during their first year of teaching. Likewise, inspiring learning circumstances can bring about self-regulating skills that students can utilize to overcome these conditions (Koivuniemi et al., 2017).

Hughes and Smail (2014) assert that there is widespread agreement that a student's transition to higher education contributes significantly to their future success; nonetheless, no consensus exists on ways to offer first year support during this transition. The findings of Hughes and Smail (2014) accentuate that facilitating support during the transition may bring about an enhanced student engagement if emphasis is directed at student well-being, life style and social assimilation. In 2007, a noted South African university set up its first year academy, which is a group of practice for university academics of first year students that encourages promotion of optimal student education and envisages lecturers to facilitate the best use of learning approaches (Jacobs et al., 2014). Over the past two decades, it was noted that a significant increase in the number of enrolments originated from non-traditional students, who had disappointing levels of performance in school, and had poor communication abilities, particularly in English language. Moreover, the non-parametric, Mann Whitney U test unveiled statistically significant differences of opinion on the competence of female or male in certain roles.

Student support programs help in familiarizing students to tertiary education environments and also establish the rudimentary skills that have eventually contributed to their bigger advancement and retention at the university level (Bui, 2002). Whilst transition to university from high school may be onerous; nonetheless, there are multitudinous university students who are not well prepared and ready for this adjustment and transformation (Brinkworth et al., 2009). The findings of Brinkworth et al. (2009) pointed out the necessity for the non-specialised transition changeover programs in universities to fulfil the requirements of first year scholars and assist the shift to tertiary from secondary learning. Bui (2002) explored the background attributes of first year college students of a recently established university, their motives in aspiring for higher learning, and their first year experiences. Bui recommended that the provision of support services were unswervingly addressing their distinctive tasks and apprehensions.

Worldwide, there are small universities that provide enabling platforms that are usually directed at secondary school students that have performed exceptionally or those students that had

underachieved in their university entry exam (Goggin et al., 2016). This engagement involves students at a transitional phase of cognitive growth; nonetheless, Goggin et al. contend that enabling platforms prepare students for an efficacious changeover into higher education or tertiary students. Additionally, utilizing a qualitative investigation, Brooman and Darwent (2014) measured changes in a number of factors that impacted on the success of first year university students and these were autonomous learning, social integration and self-efficiency.

Facebook is one of the most popular social network sites that is utilised today to facilitate online discussion (Businessinsider, 2017). Procuring data from two ethnographic stories from freshly registered first year students in a UK university, Stirling (2016) investigated the authenticities of the utilization of social media for learning purposes. The study unveiled that first year experience of students on the usage of Facebook were not uniform, but receptive to their explicit eco-social practices. The increasing use of Facebook in tertiary studies by first year undergraduates has won much devotion and consideration for students and learners.

Critics of higher learning education have emphasised that many college graduates are not able to join the workforce as they do not possess the required level of skills and expertise and are not prepared to secure good employment (Estepp et al. 2012). Goggin et al. (2016) allege that openness to diversity and challenges establish a direct effect on undergraduate scholars. Goggin and his colleagues unveiled that openness to diversity and challenge was positive and significantly correlated to Grade Point Average (GPA) and university experience.

In the United States, a moderately sized university in the year 1997 initiated the first year experience program with a view to impart additional curricular or extracurricular activities into the principal courses (Jamelske, 2009). Nonetheless, the investigation pointed out that the GPA of first year scholars were higher in comparison to non-first year ones. Koivuniemi et al. (2017) investigated the cognitive, emotional, and motivational issues encountered by the first year students. This study found that students with elevated self-regulated skills stated lesser learning challenges as compared to their counterparts.

Moreover, Goodwin et al. (2016) examined the assistance finding behaviours and familiarities of first year university scholars with regard to their mental concerns. Goodwin and his colleague's research findings accentuated that mental welfare is related to good performance of the first year students.

Astonishingly, Sarah (2006) found that having a first year experience program for certain groups of student's only segregates students from other cultural backgrounds and negatively affects their development at the university setting. Thogersen (2016) alleges that Asian countries have been one of the largest sources of foreign students to Western countries. The exposure of students to the international world provides international students with a chance for personal development and time for becoming a part of middle class families. Alessi et al. (2017) investigated the impact of marginal stress, anxiety that bisexuals, gays and lesbians had encountered in the first year of tertiary studies. These studies found that universities need to use miscellaneous strategies to safeguard and enable students to familiarize themselves to the university atmosphere.

Research methodology

The main purpose of this paper is to examine the benefits of the First Year Experience Program for the first year distance and flexible learning students at the University of the South Pacific. The Introduction to Management Course (MG101) using distance and flexible learning (DFL) was used to examine the benefits of the First Year Experience Program to the first year students at the University of the South Pacific. There are two reasons for selecting MG101DFL course. First, the first author of this paper has been teaching MG101DFL course for the last 5 years. She has implemented the First Year Experience Program in her course; therefore, she has good

knowledge on the benefits of this program to the students. Second, data from these courses are readily available to the key researchers of this paper. The first author of this paper is also involved in preparing the distance and flexible learning materials for the MG101DFL course. As a result of this, she has rich knowledge on how to integrate the First Year Experience programme to the academic needs of students from the 12 Pacific Island countries.

Data from this study was collected from year 2013 through 2017. A participatory research strategy was used to collect data for this study. According to Bergold and Thomas (2012), the participatory research strategies are directed towards individuals whose work and lives are under study. This research is categorised as a participatory research because the lives of the authors of this paper are under study. As compared to face-to-face interviews and questionnaire distribution, participatory research technique is a superior research strategy for a number of reasons. First, the researchers have robust knowledge of the activity that they are participating in. In face-to-face interviews and structured questionnaire distribution, the third party has strong knowledge of the research activity rather than the researcher's. Second, the researchers can provide detailed information to answer the research questions as they have strong knowledge and understanding about the research process. The enrolment details for the students in each of the semesters are as follows:

Table 1
Enrolment details of MG101DFL students

Year	Semester 1	Semester 2	Total	Semester 1		Semester 2		Total	
				Male	Female	Male	Female	Male	Female
2013	339	366	705	130	209	139	227	269	436
2014	577	408	985	220	357	157	251	377	608
2015	617	349	966	212	405	144	205	356	610
2016	554	336	890	211	343	122	214	333	557
2017	533	N/A	533	198	335	N/A	N/A	198	335

N/A is not available.
Source: Developed by the Authors of this paper, (2017) by using data from the Enrolments Database.

Moreover, the First Year Student coordinator started working with the primary researcher in her MG101DFL course from semester 1, 2015. The First Year Experience Coordinator provided support to the MG101DFL course coordinator in a number of ways. Some of these include intervention programmes, workshops and *Talanoa*[2] (discussion and talking) sessions. The information collected for this paper was gathered from email conversations and formal discussions between the course coordinators and students. Some of the issues that were discussed between the course coordinator and the students were on the benefits of the First Year Experience Programme to the students from the Pacific Island countries and how this programme has helped them in their studies. These findings are summarised and reported below.

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[2] *Talanoa* sessions are important discussion sessions in the Pacific Island Countries. Traditionally, these sessions are used to discuss issues and challenges between the chiefs and village men in the Fijian villages.

Research findings

There are a number of benefits of the First Year Experience Programme to the students from the twelve Pacific Island countries enrolled in the MG101DFL course. Some of these benefits are explained thoroughly in this sub-section.

Keep track of their studies

The First Year Experience Program helps the first year students to keep track of their studies. There are a number of activities organised by the First Year Experience Programme that help students to enhance their learning. According to Lampe *et al.* (2006), in the modern era of technological advancement, students learn in a number of different ways. The use of Facebook, Twitter and MySpace are some of the important tools used by the First Year Experience Coordinator to assist the MG101DFL students to adjust to the university life. The course coordinator for MG101DFL course submits the progress report to the First Year Programme coordinator who sends an email to the individual student and reminds them if they are not performing well in the course that they need to exert more efforts in their studies. As a result of this, students adjust the time and efforts that they are spending on their studies. This is how one of the MG101DFL students responded after receiving an email from the First Year Coordinator (Lal 1):

> "…I have received an email from the First Year Experience Coordinator, informing me that I am about to fail the course. Please do let me know what I have to do to improve my studies. How much more effort do I need to place on my studies?

Similarly, another student responded to the email from the First Year Experience Coordinator as follows (Mana 2):

> "…I am very worried about my studies, I think I am about to fail this course. Can you help me with my studies to improve?

Once the course coordinator receives these responses from the students, she immediately responds to this by counselling the student. This is how the course coordinator for MG101DFL course responded to one of the above queries:

> "…It is good to see that you have realised that you are an at risk student. You can improve your studies by using a number of techniques. Some of the ways how you can improve your studies is by attending satellite tutorials and spending more time with your studies. Carefully follow the exam guideline that I have given you and follow this guideline to improve your studies…"

This finding can be easily linked to the Cognitive and Moral Development School of the Student Learning theory. According to this school, a first year student grows cognitively and intellectually, therefore, universities have in place different programs that provide the first year students with technical skills. The early warning system intervention mechanism has helped the First Year Students to keep track of their studies while at the same time developing their cognitive and moral development skills. This finding is similar to the findings of the studies conducted by Koivuniemi et al. (2017). According to Koivuniemi et al. (2017) found that new learning techniques can help students to self-regulate their studies. Self-regulation of studies by students can be achieved via internal and external factors. Internal factors that help to achieve self-regulation is the student's own realisation that they are at risk or a third party helps the students to realise that the student is at risk. The early warning system is an externally driven system of self-regulation whereby the First Year Student Experience Coordinator plays a key role in informing the students that they are at risk students.

Improves students motivation

The First Year Experience Programme has helped students to improve their motivation level and enthusiasm towards their studies. The first year students are able to improve their motivation by using their Moodle page, Facebook account, workshops and other resources. When first year students start their university studies, most of them are not able to effectively organise their studies for a number of reasons. First, some first year students are not able to easily adjust to new teaching techniques used at the university setting. Second, most of them lack time and stress management skills. The First Year Experience Programme organises workshops for students to help them become acquainted with innovative ways of handling their university life. According to one of the first year MG101DFL students (Moses 3):

> "…I was lost when I had first started my studies at the University of the South Pacific. The workshops organised by the First Year Experience Programme has been really effective for me. I am now able to effectively manage my studies and my personal life…"

Similarly, another first year student commented that (Qalo 4):

> "…the early warning system mechanism has helped me to get back to my studies. My performance has improved as compared to before. Before I was not organised with my studies, but after attending the workshops organised by the First Year Experience coordinator, I am much more organised now. I am really thankful to the First Year Experience Program as they had rescued my studies at the right time…"

The above intervention mechanisms used by the First Year Experience Programme have boosted the motivation level of the MG101DFL students. These workshops have provided students with new and innovative ways of managing their studies at the University of the South Pacific and handling academic matters related to their personal life. This finding also parallels findings of studies conducted by Stirling (2016). This study found that social media and other interactive technologies play a key role in enhancing students learning experiences and aid in the overall learning process.

Helps first year students to improve their productivity

The First Year Experience Programme helped students to improve their productivity in a number of ways by effectively managing their time and their personal life. Programmes and workshops organised by the First Year Experience Programme include: (1) academic efficiency, (2) improving Moodle and Turnitin skills, (3) controlling finance, (4) personal values and soft skills, (5) work environment and health, (6) depression and anxiety, (7) stress management and (8) basic communication. All of these workshops have helped students to improve their productivity. They are better able to manage their finances, academic life, stress and time. A first year student who is able to effectively manage this will be able to improve his or her performance which is evident from the grades that the student is able to achieve in his or her first year courses. The MG101DFL course coordinator at the University of the South Pacific submits the following on this issue:

> "…There are a number of problems that a first year student faces at the University of the South Pacific. Many of these problems are due to poor time management, high level of stress and problematic personal life. The workshops coordinated by the First Year Experience Program have helped the students to manage both their academic and personal life. The distance and flexible learning students at the University of the South Pacific can be divided into two tiers. The first tier has students who are studying from their home country while the second tier has students who are from the 12 Pacific Island Countries but are studying at the Laucala Campus (Suva Fiji). The PowerPoint

presentation from the workshops that is sent by the first year student coordinator to the regional students has extremely benefitted them…"

Similarly, the MG101DFL students have also commented that they have been able to improve their productivity by using innovative techniques from these workshops. According to one of the students (Steele 5):

"…The First Year Experience Workshop provides us with the tools on how to improve our time management. Before attending these workshops, I used to be wasting my time, but I am no longer doing that now…"

This finding supports the findings from the studies conducted by Koivuniemi *et al*. (2017) and Goodwin *et al.* (2016). This study found that workshops and other training programs will enhance the knowledge and skills of the first year students on how to manage their personal and professional life.

Helps students to adjust to university life

The First Year Experience Program has helped students to adjust to their university life. The First Year programme coordinator works closely with the Centre for Flexible and Distance Learning (CFDL) in order to improve student's ability to adjust to university life. The way courses are delivered at the University of the South Pacific is different from the way courses are delivered in secondary schools in the twelve Pacific Island countries. The Secondary Schools at the University of the South Pacific have a teacher-centred teaching style where the teachers provide information to students on the course content delivery. Students mainly try to rely on the materials that are provided to them by their teachers. At the University of the South Pacific, there is a lot of emphasis on the student-centred learning whereby students are required to do their study independently in an encouraging learning environment, as one of the MG101DFL students (Student 6) explicates:

"…the first year experience workshops have helped me to adjust to the way education is delivered at the University of the South Pacific. Here you are required to do lot of independent study; however, way back home, all the information was provided by our teachers in schools…"

In order for students to do well in their studies, students are required to quickly adjust to the way education is delivered at the University of the South Pacific. If they are not able to do so, this negatively affects their ability perform well in their studies. This finding is parallel to the findings of the studies conducted by Hughes and Smail (2014); this study found that facilitating appropriate first year programme helps students to effective transit to the higher education style of learning.

Helps students to improve their grades

The First Year Experience program has helped students to improve their grades in the first year courses at the University of the South Pacific. The intervention mechanism used by the First Year Experience program coordinator has been immensely effective and the MG101DFL course coordinator elucidates:

"…the programs provided by the First Year Experience Program have been extremely effective for the Laucala and students studying in 12 Pacific Island Countries. In order for students to improve their grades, they need to be effective in meeting both the educational and the personal challenges that they face every day. Students who are able to effectively manage their time and personal life are the ones who are able to achieve good grades without difficulties at the end of the course…"

Furthermore, one of the first year students, who hails from a distant island nation, emphasises how he was able to achieve better grades with the assistance of the First Year Experience program (Student 7):

> "…To get better jobs once I graduate, I need to get better grades in my courses. The programs and the activities of the First Year Experience Program have helped me to achieve better grades. When I had first come to Fiji from my island, I was scared and I had to adjust to a totally new studying and living environment. I managed to do this with the help of the First Year Programme…"

This finding is parallel to the findings of the studies conducted by Jamelske (2009). According to Jamelske (2009), the first year experience program in a moderately sized university in the United States had positive impact on the first year student's grades. This study also concluded that the First Year Experience Program has positive impact on the grades of the students at the University of the South Pacific.

Theoretical contributions of this study

This paper contributes to the Student Development theory and, more particularly, the Cognitive and Moral Development aspect that helps in explaining the First Year Experience Programme for MG101DFL course at the University of the South Pacific. The research findings from the University of the South Pacific broadens our knowledge and enlightens the first year student in handling the many challenges while managing their life in a multi-ethnic and multicultural university in the South Pacific region.

By having a dedicated full time officer to handle the First Year Experience Programme, there are several benefits to the students. Firstly, students are given a two day orientation or induction programme of what is to be expected at the University. Second, the program coordinators hold a number of workshops on various topics for students to learn more about the studies, such as operation of Moodle shells, how to check for plagiarism and learn various study tools (Lampe *et al.,* 2006). Thirdly, encouraging students to network with each other improves the moral and motivation levels of new students, as they work in teams and are less daunted by the demands of academic work. Additionally, the Program helps mental development of students by helping them to effectively manage their time and personal life. The research findings from this study contribute to the existing empirical studies and help to further develop the Cognitive and Moral Development Theory.

Conclusions and directions for future research

This study has capitalised on the experience of the first author to derive the benefits of the First Year Experience Programme, as she works closely with the First Year Experience Coordinator at the University of the South Pacific. The findings of this study have portrayed five significant benefits from the First Year Experience Programme implemented at the University of the South Pacific's Distance and Flexible Learning programme. These are (1) help students to keep track of their studies, (2) improve student's motivation, (3) help first year students to improve their productivity, (4) help students to adjust to university life, and (5) help students to improve their grades.

The paper has opened up pathways for research to look at other programs for the first year students and how these help students in their first year studies. Future researchers could also look at how the First Year Experience Program benefits the face-to-face students at the University of the South Pacific. Also, researchers could conduct research at other universities in the Pacific region on the First Year programmes designed for the first year students.

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Matching effective mentoring characteristics with online mentorship training

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Abstract

This study identified the characteristics of effective K–12 administrative mentors. The results were used to design training modules for prospective mentors who will be supervising administrative interns. The modules were designed for relevance across different disciplines. Even though the modules were designed for mentors of educational interns, they are adaptable to internships such as field experiences, practicums, and apprenticeships.

The study had three phases. Phase One of the study was review of literature to identify qualities of effective mentors and the importance of high quality training for mentors. Phase Two included conducting surveys and interviews with administrative interns and experienced mentors. Phase Three entailed the design of training modules for mentors who supervise interns.

Participants in the study were practitioners who rated effective characteristics of mentors. From there, a purposeful sample of past administrative interns and mentors were interviewed to rate characteristics that were most critical in mentoring a future school administrator. The finding of highly rated characteristics was then incorporated into online training modules for mentors. The content of online mentor orientation modules was designed in three areas. A *Welcome* module introduced the mentor to content of the internship, procedural aspects and videos of practicing mentors describing effective mentoring skills and attributes. By building upon existing literature and through interviews with experienced practitioners, the researcher was able to create online mentoring modules that are adaptable across fields and that provide a strong foundation for best practices that are effective with varied types of participants.

Keywords: mentor training, online training modules, field-based internships, mentor attributes, effective mentor characteristics.

Introduction: the need for mentor online training modules

The purpose of this study was to create online training modules for mentors who supervise educational administrative interns. Due to the increasing expectations of building and central office administrators and the demand for instructional leaders who are prepared to lead in today's schools, it is imperative that prospective administrative interns have high quality mentors to supervise and guide them. This study informed the development of online training to prepare administrative interns (including under-represented groups) with equitable opportunities as future administrators. The onset of higher standards for administrators and teachers mandates that schools are operated by instructional leaders who work collaboratively and problem solve with complex issues.

The internship focuses on the identification of leadership styles of administrative interns and how they use skills and strategies to make ethical decisions. The use and demonstration of soft skills (communication, teamwork and collaboration, adaptability, problem solving, critical observation,

and conflict resolution) are essential in the work environment. Mentors need to be able to possess those skills so they can advise and support future school leaders. Interns need the support of a highly qualified mentor to aid them in defining who they are, use the skills that they have and strengthen the skills that they need to hone. Without a highly qualified mentor, prospective administrators may drown in complex educational issues that they need to confront, the politics and policies of educational reform and the balance of enriching school, parent and local community. Traditionally, workshops and training are provided within a district, or administrators and teachers travel to obtain professional development. Since it did not seem feasible to provide mentor training sessions that could be convenient for all mentors, this researcher created a forum where all mentors could receive high quality training online.

The theoretical framework

Mentoring has been a valuable component of supporting organizational goals since the mid-1970's (Kanter; 1977, Roche 1979). The conceptual framework for planned mentoring, as stated by Samier (2000), should focus on roles that result in the mentor being a guardian, guide and counsellor. There is a need to develop high-quality administrative preparation programs. Lovely (2004) recommends that universities develop partnerships with school districts to provide substantive field-based experiences for interns.

The modules developed in this study reflect recommendations for effective administrative induction programs (Hackmann, Russell, and Elliott 1999), characteristics of administrative supervisors (Barth 2003) and mentoring (Hall 2008). Field-based internship experiences are deficient if the skillset level of the supervising mentor is not of high quality (Levine 2005). Communication, teamwork, organizational ability and developing others are some attributes that successful school leaders should possess (NASSP 2008).

Modules that are designed for administrative induction programs offer high-quality training for mentors so intern candidates receive ongoing supervision, guidance, and evaluation. Siccone (2012) purports that confidence, communication, collaboration, coaching and continuous improvement are essential skills for effective school leadership. The integration of collaboration, peer coaching, inquiry, collegial study groups, and reflective discussion are skills of effective instructional leaders (Blasé and Blasé 1999). According to Callaghan (2012), strategies and processes used by effective supervisors include excellent communication skills, fairness, good organizational skills, knowledge, accountability, efficiency, adaptability, social skills, diplomacy and self-discipline.

According to Goldring and Taie (2014) a significant number of school principals leave their positions each year. Kena, G. et al (2016) support this claim by stating 11% of school principals left the field for another type of job from 2011- 2012 and 2012-2013. Among principals in 2011-2012, one in five had left their school by 2012-2013. Bitterman, Goldring, and Gray (2013) state that many principals are near retirement age. Thirty-one percent of principals in public schools are age 55 year or older. This provides evidence that there will be a strong demand for new principals to join the workforce. The importance of high quality mentoring is substantive since they will be leading our schools with higher stakes than ever. Mentoring is emerging as one of the most popular strategies for leadership development, partly because of its cost-effectiveness, and partly because of its strategic effectiveness. Case studies reveal that mentoring is effective (Corner 2014).

Success of mentors include establishing a formal training program that includes goals, identifying skills and competencies. This focus provides mentees with a solid foundation to become an accomplished intern. Strong mentoring can instill foundational knowledge for mentors (Dawling, Andrews, and Bucklew 2010). Training mentors in their role and providing a base so they can

share their knowledge and expertise in the area of focus will result in immediate and long term benefits for the mentor and mentee.

Villani (2006) provides an overview of district, regional, state and professional association models of formal induction and mentor programs for educational administrators. The National Principal's Mentoring Certification Program was developed by Principal Advisory Leadership Services (PALS) Corps an initiative of National Association Elementary School Principals (NAESP) is one of these models. The purpose of the program was to train current school principals so they can guide, mentor and support aspiring principals. Mentor training should be designed as a formal program (Hall, 2004, Hamlin, R. G., & Sage, L. (2011)). Components of the training include learning goals, relationship building and responsibilities of an effective mentor (Hall, 2008). Characteristics of effective mentors need to be clear. Unclear expectations roles and responsibilities for mentors can result in poorly trained mentors (Janas, 1996).

Mentors need to support mentees in bridging the gap between theory and practice. Relationships are part of a bridge that are necessary in a mentor-mentee relationship (Singh 2013c). Effective mentors are able to develop a collegial bond with their intern. The following characteristics and their development can be found in conversations between the mentor/mentee: a) constructive discussions focused on being able to see the other person's side, b) negotiation of maintaining good relations, c) focus on changing positions (Costa, Baker and Shalit 1997).

Cherniss and Adler (2000) designed a model that is based on social skills. Role modeling by the mentor that involves collegial leadership, setting of goals and organizational support can advance the development of a mentee's skills. Covey (2004) further ascertains that change in leadership structures are a process. The support that mentors can provide the mentee must be stated to the mentor during training.

One of the self-paced modules focuses on soft skills that leaders need to possess. The development of this module is based on Adams' (2014) concept that learners (the mentor) needs to be empowered to take ownership of their own development. Through innovative, performance based learning, soft skills are honed as they collaboratively problem solve and make decisions. The application of communication, collaboration and adaptability can impact learning outcomes and put the learner in control of their learning. The development of programs that focus on soft skills development will result in empowering learners. During an internship, mentees can learn on the job as their mentors aid them in focusing on communication, adaptability, ethical decision making and accountability for their actions and their work as they implement their internship project.

Today's principals are expected to be accountable (Daresh 2001). Davis et. al (2005) state that leaders should be versed in standards that support development in managing curriculum and instruction and focus on research based competencies. The National Policy Board for Educational Administration (2015) developed Professional Standards for Educational Leaders (PSEL) as a guide for knowledge and skills of school leaders.

Educational leaders in the field were the voice of the training modules. Video-taped interviews captured current perspectives of the attributes of successful leaders and how they were applied in the field. Interviews were conducted of two superintendents, one Middle School Principal of the Year and a student who had completed the administrative internship course.

The literature about standards, curriculum, policy and administrative skills influenced the design of the online training modules for mentors. The focus and topics of the training modules and the content of each were designed through decades of research reviews.

Methodology

This study was in response to the Maine Chapter 114 ruling (Maine Department of Education 2014). Chapter 114 ruling, EDU 791 (Internship) and EDU 706 (School Community Relations and Communication) which introduced significant changes to the content of the Certificate of Advanced Studies courses. The changes were twofold:

1) An administrative internship be lengthened to 6 months from 15 weeks; and

2) Mentor training is now required. This study focuses on mentor training.

The first change relates to those seeking to be an administrator in an educational setting. They must demonstrate a wide range of relevant knowledge, skills and field experience in a variety of school settings for a duration of six-months. EDU 791 is a 15-week field-based internship course. EDU 706 is not field-based.

The second change and the focus of this project is that the supervising institution of any internship course must provide high-quality training for onsite mentors. The training is necessary so the on-site mentor may provide the intern candidate with ongoing supervision, guidance and evaluation of high caliber.

The literature supplied information and defined the word "effective." The search entailed determining the requirements and responsibilities needed by the on-site mentor for the intern candidate to have a successful and high-quality field-based experience. With this knowledge, modules were designed to provide training for on-site mentors. The results of the training will provide both the onsite mentor and this study with evidence-based practices that support interns in the field.

In addition to the literature review, data was gathered from aspiring administrators and senior administrators. The aspiring administrators were students from two sections of EDU 791. The first section of students completed the course in Fall 2013 and the other section of students completed the course in Spring 2014.

Table 1
Survey participants and prompts

Participants	Prompts
Fall 2013 EDU 791 – Internship 8 students	"What do you feel are necessary characteristics for an effective on-site supervisor?"
Spring 2014 EDU 791 – Internship 7 students	"What other ideas and thoughts would you like to share that relate to an effective on-site supervisor?"
Intern and Mentor #1	"What do you feel were the successes of your internship experience together?"
Intern and Mentor #2	"What do you consider necessary and important attributes of both the intern and on-site mentor?"
	"What would be any advice that you could provide for on-site mentors and administrative interns during the internship process?"
Central Office Superintendent #1 Central Office Superintendent #2 Middle School Principal of the Year	"You have indicated that the following skills are necessary for an effective supervisor, please share your thoughts as to why." ▪ Knowledge and Adaptability ▪ Diplomacy and Ethical Decision Making ▪ Organization and Social Skills

There were 36 students enrolled in the fall section and 14 in the spring section. Table 1 provided the survey questions asked of students and administrators. The information gathered, both in terms of changes in teaching and learning and in terms of data, were used to create modules in EDU 791 Internship. In addition, video interviews were conducted.

Each administrator was presented with a list of supervisor skills (Callaghan, 2012). They were asked which skills they believed were important for effective supervisors to possess. Videotaped interviews were conducted based on their selection of skills. These characteristics were used as a foundation for designing training modules for prospective administrative mentors for administrative interns.

Listed below are components of the process:

- Brainstorm what the content of the training module would be.
- Determine how mentors would access the modules.
- Define how to recognize mentors who complete the training modules.
- Create a video that welcomed the mentors into the training modules
- Interview Patrick Phillips, Superintendent of Schools in RSU 23 – base content on the two characteristics of "knowledge" and "adaptability"
- Interview Mike Pulsifer, Assistant Superintendent of Schools in RSU 23 – base content on the two characteristics of "diplomacy" and "organizational skills"
- Interview Sally Biggs (Principal of Hartford Magnet Trinity College Academy (HMTCA-Principal of the Year) – base content on the two characteristics of "ethical decision-making and "social skills"
- Interview scheduled with Jen McPartland (past intern of EDU 791) and Deb Duprey (past mentor for Jen in EDU 791) – base content on their successful experience of intern and mentor in the administrative internship
- Create modules of procedural work (syllabus of course, intern expectation, mentor interns and university expectations

The second module, *Documents*, provides an overview of important procedural literature that is used throughout the internship by the student and mentor. They include: Internship Agreement, Syllabus, (ISSLC) Standards, Pre/Post Self-Assessment, Internship Plan Guide, Final Paper Guide and Mentor Evaluation. The mentor signs off on an agreement stating that they have read and reviewed the materials in this module.

The third module, *Attributes*, contains data characteristics of effective supervisors, what students believe are effective characteristics, and student survey results related to effective supervisors. Videos are a component of this module. Four current educational leaders share their perspective of the attributes of effective leaders and provide examples of the attributes. Patrick Phillips --- Superintendent of Schools and past Deputy Commissioner of the Maine Department of Education shares information about the importance of Knowledge and Accountability. Michael Pulsifer-Superintendent of Schools in Maine provides his perspective about the importance of Collaboration and Support in schools and as a district leader. Sally Biggs – Connecticut Middle Principal of the Year 2013 discusses the critical importance of Communication and Ethical Decision Making Skills. Jennifer McPartland, a student who completed the Internship shares what the attributes of an effective mentor and relationship with intern are through her experiences of a successful internship with a high quality mentor.

The final module 4 is a Statement of Compliance. Mentor sign-off on a letter that states they will provide ongoing supervision, guidance, and evaluation of their administrative intern. This

redeems them a certificate noting that they have completed the State of Maine requirements as a University of New England mentor for administrative interns.

The surveys completed by administrative interns and practicing interns provided me with a rationale of how to design the mentor training modules. The content of the four modules that have been explained were designed with the survey results and literature review in the three areas mentioned.

To better inform the reader, I will explain the third training section. The "Orientation Module" was designed after reviewing, analyzing and synthesizing the survey results and review of the literature. This third section has four modules within it which are 1) Introduction, 2) Objectives, 3) Attributes and 4) Statement of Compliance. I will focus on the training component of EDU 791 Attributes.

Results

Students who were in EDU 791-Internship were surveyed to determine what they believed were traits that an effective mentor should possess. The fifteen students were provided with a list of traits. These students were at the end of the Certificate of Advanced Graduate Studies program. Students were asked to check off the characteristics that they wanted their mentor to possess. The list of fifteen traits were determined through the review of the literature. Table 2 identifies the characteristics of effective supervisors/mentors. The student responses are in rank order. Communication skills were the most important to students and efficacy was the least.

Table 2
Student Responses to Characteristics of Effective Mentors

Callaghan: Characteristics for Effective Supervisors	Student Response Results
Excellent communication skills	7/15
Supports learning	6/15
Knowledge	5/15
Adaptability	5/15
Collaboration	4/15
Social skills	3/15
Diplomacy	3/15
Good Organizational Skills	3/15
Professional	3/15
Accountability	2/15
Self-discipline	1/15
Fairness	1/15
Efficacy	0/15

Discussion

Callaghan (2012) research was used as a foundation for the two surveys in this study. There was a total of 18 participants who completed the survey. The results yielded information from practicing administrative interns, interns currently in an internship and one student that had completed the internship and who had an effective mentor at that time. The results of the surveys

and interviews indicated that the literature aligned with participant responses to an extent. As shown in Table 3, student responses indicate that interns report that the first five characteristics are essential in a mentor. Communication was critical to interns. As they worked through the internship they needed their mentor available to answer questions and guide them through their projects. Supporting their learning was also a need for interns. Communication about their project and discussing aspects of their work and aiding them when they had questions and concerns was a priority for students. Knowledge and adaptability would support students as they gained more knowledge and experience during their internship. The experienced mentor could share past experiences with the intern and collaborate of solutions. All of these attributes are directly related to the day to day relationships of intern and mentor. The next four attributes (social skills, diplomacy, organizational skills and being professional) were next in importance by students. These skills were not ones that significantly affected the student's relationship with their mentor and were not rated as high as the previous five attributes. Student responses identified that four of the characteristics that diverged from the literature were significant.

The survey results from administrators aligned with student responses in the following characteristics: excellent communication skills, supports learning, and knowledge. These three characteristics were significantly important to both the interns and practicing administrators. The design of the training modules focused on these areas due to their significance. There was a strong parallel to student and practicing administrator responses and the review of the literature. Collaboration was a characteristic that administrator determined was necessary for a mentor. Students did not rate this as significant but did find it important. Good organizational skills and accountability were rated as significant with the administrators. The literature echoes this by strongly recommending that mentors should be clear communicators, meet and discuss concerns with their mentees and support students by meeting regularly. Clear goals and responsibilities are part of the communication and collaboration. Accountability for both the mentor and mentee are necessary for student success in the internship. Table 4 identifies the design and content of the orientation training modules.

Table 4
Design and content of orientation training module

Figure	Content of Module	Intent
Figure 1	Table of Contents and Ten characteristics of effective supervisors	Overview of Review of Literature
Figure 2	What students believe are effective characteristics	Student survey results
Figure 3	Patrick Phillips Superintendent of Schools	Interview – Knowledge and Accountability
Figure 4	Mike Pulsifer Superintendent of Schools	Interview – Collaboration and Support
Figure 5	Sally Biggs Connecticut Principal of the Year (2013)	Interview – Communication
Figure 6	Jennifer McPartland Principal Intern	Interview – Attributes of an Effective Mentor and Intern
Figure 7	Agreement	Sign off of Orientation section of training modules

Images of each of these training areas may be found in Figures 1 through 6.

Figure 1: *Orientation Module - Table of Contents & First Content Training: Ten Characteristics of Effective Supervisors*

Figure 2. *Orientation Module: What Students Believe are Effective Characteristics*

Figure 3. Orientation Module: Superintendent Interview - Knowledge and Accountability

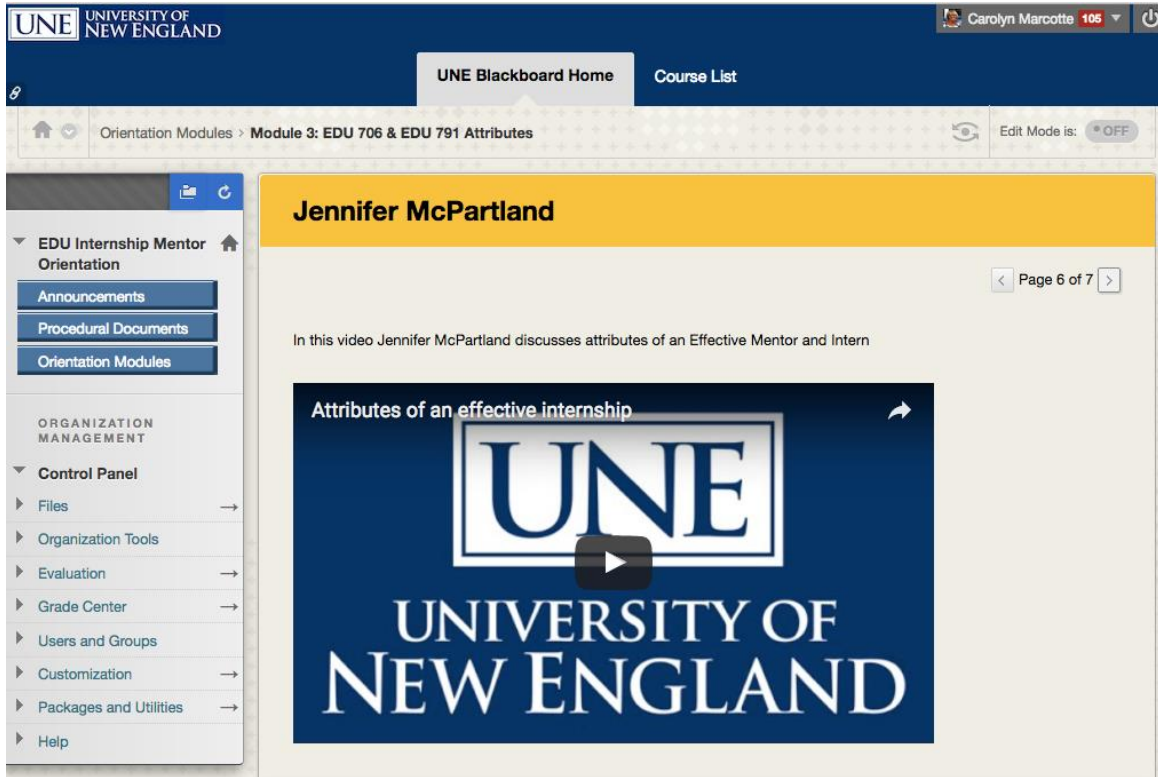**Figure 4 . Orientation Module: Superintendent Interview – Collaboration and Support**

Figure 5. Orientation Module: Interview - Attributes of an Effective Mentor and Intern
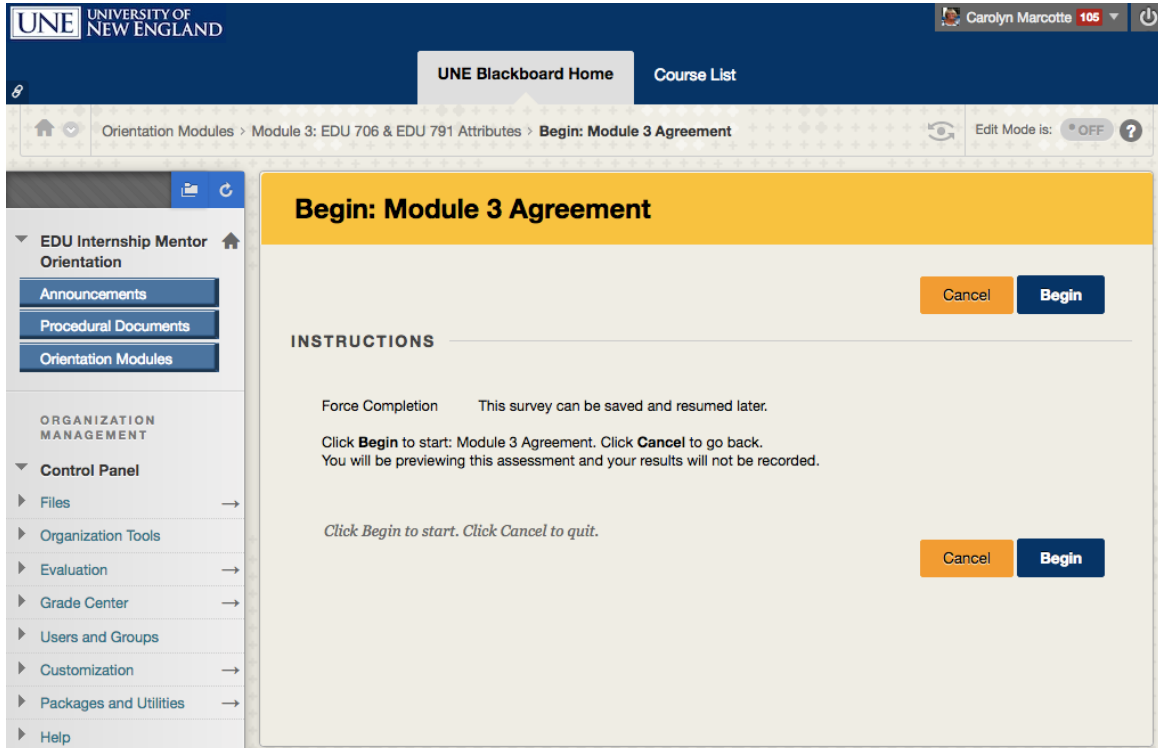

Figure 6. *Orientation Module: Agreement – Sign off from Mentor*

The figures will provide the reader with a concrete visual of the design of the on line training modules in the Orientation module. The images provide information of the six contents areas of training within the module and the seventh "agreement" section where the mentor signs off on the orientation module.

The outcome of the survey results, interviews and literature review confirmed agreement on certain characteristics of mentors. The data was used to design the content of training modules. These trainings prepare mentors with essential skills to support educational interns and provide equitable opportunities as future administrators.

Conclusions

The online training modules are a ground-breaking tool where mentors from around the world can access training as mentors of administrative interns. This model informs the design and development of future high quality training modules for supervisors and others. Schools need effective administrators. Interns who have rich educational leadership experiences and effective mentors are more apt to be successful as an administrator themselves. These implications can lead to schools that are lead with strong instructional leaders who can provide support and guidance to their staff. This all positively effects the students' chances of educational success.

It is critical that educational administrative interns have quality mentors. Mentoring is a primary focus in administrative preparation. This format is the first in Maine and the first to adhere to the ME Chapter 114 requirements. This type of training can be used for mentors of all professional affiliations. Access to these modules can be 24/7 which implies that the training can be completed at the convenience of the mentor. If mentors are aware of their expectations and are highly trained, there is a strong implication that interns will have the adequate support that they need in their growth toward being an administrator.

Recommendations for further research

Educational administrators have responsibilities that are at an all-time high stakes level. A significant amount of school administrators are near retirement age (Bitterman, Goldring, and Gray 2013). As current educational administrators are retiring, the pool of candidates for new administrative roles need to be trained and ready for the diverse work that they will encounter in schools and districts. The need for high quality, trained mentors is of utmost importance for perspective educational administrators. Research shows that mentoring is effective (Corner 2014). A recommendation for practice would be to provide educational administrative interns with highly effective mentors during their internship (NASSP 2010).

Formal training programs that focus on goals and identifying skills and competencies will bring success (Hall, 2006; Hamlin and Sage 2011) to both the mentor and mentee. A recommendation related to the content of the training would focus on skills, processes, expectations and role modeling. Mentors need to possess particular skills so they can influence and advice perspective administrators. Formal training would focus on skills such as collaboration, communication, relationships and organizational skills. Interns would become aware and apply these skills, strategies and processes from the role-modeling of their mentor.

A recommendation that would enhance the mentor training is that experienced administrators be part of the training content. Videos of practicing mentors describing effective mentoring skills and attributes should be part of the training content. Mentors needs to progress the interns from theory into practice (Singh 2013c). It is advantageous for mentors to be connected with other practicing administrators and hear their opinions and views about the skills that interns need as they advance to administrative positions. Mentors can be in a vacuum at times and hearing how

other practicing administrators effectively support their staff and operate their schools and districts can provide strategies and tools for a mentor.

A final recommendation is that the mentor be accountable. As the mentor progresses through each step of the training there needs to be a level of accountability. Signing off on the training or completing a contract to complete the mentorship with fidelity is necessary. A mentor has the responsibility and honor of developing a mentee into a skilled administrator.

One way to accomplish these recommendations is to develop a program that is convenient for the mentor and can be completed significantly before the internship occurs. The investment of the mentor is critical. The design and content of the internship course should be considered so there is an alignment with the mentor training and internship course. Online training modules would fit well into the design and accomplishment of these recommendations.

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Dr. Carol Marcotte completed her doctorate in School Administration & Supervision at Berne University International Graduate School in St. Kitts, West Indies. Her primary specialty areas include literacy and educational leadership.

Carol's education started as a regular classroom and special education teacher. Multi-age and looping schedules were part of her classroom expertise. In addition to working as a classroom teacher, she was a principal for 8 years. Her first role at University of New England was an adjunct faculty since 2001. In 2013, she became an Associate Lecturer at the University of New England where she works in the College of Graduate Professional Studies in the on line Certificate of Advanced Graduate Studies (CAGS) program and the Education Department in the College of Arts and Sciences. Carol's primary responsibility is an instructor in CAGS for educational leadership courses. She also teaches undergraduate courses including student teaching.

Dr. Marcotte is a past president of Maine ASCD and has served on critical committees for the international curriculum development organization ASCD. She has been a principal and Title 1 coordinator, and served as a delegate for the Ambassador-to Ambassador Education program working with Vietnam and Cambodia. She is a voracious learner and has been a member of the Maine Curriculum Leaders' Association since it began.

In 2010 the Maine Curriculum Leaders Association acknowledged Carol as Curriculum Leader of the Year in Maine. In addition, Carol was presented with the Friends of UNE award twice. Among her numerous honors, First Lady Barbara Bush presented Carol the Maine Family Literacy Grant in 2006 and 2008.

She became a founding Board Member of the Learning Forward New England (formerly New England Staff Development Council), in 2009. Carol has been President of the organization and is currently a consultant.

Dr. Marcotte has shared her expertise through service to the Regional School Unit 23 as a board member. She is currently Chair of the School Board in Old Orchard Beach, ME.

In 2013, Carol was selected as a Teacher Scholar at the University of New England. Her project was designing orientation modules for administrative mentors. The on line modules are design deliver high quality training to mentors as they support administrative intern candidates with ongoing supervision, guidance, and evaluation. In 2014, Carol presented her project, "Research Based Course Design for Supervisors of Aspiring School Administrators: Effective Mentor Characteristics. at a NERA poster session and to the UNE Board of Trustees.

Carol travels to St. Maarten to visit schools and conducts research. She is a yoga instructor. Her passion is to enjoy her 15 grandchildren.

Editor's Note: This study integrates teaching strategies for left-brain and right-brain learning and relates the results to learning style preferences and quality of learning in scientific subjects.

The impact of teaching using a strategy based on integrated learning style of the brain in acquisition of scientific concepts and science processes skills among class teacher students

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Jordan

Abstract

This study aimed to examine the impact of teaching using a strategy based on integrated learning style of the brain in acquisition of scientific concepts and the science processes skills among student-teachers. To achieve the aim of this study, two study tools were developed and applied on a study sample of 60 students divided into two student groups, a control group and an experimental group .The study results show that there is a statistically significant difference at (α=0.05) level between the average marks of the two groups over the scientific concepts test and the science processes test for those who learned using the proposed strategy (experimental group), and those who learned in the traditional way (control group) and that the experimental group outperformed the control group. According to the study results, the researcher recommended to hold training courses for teachers in the integrated learning pattern strategy, taking into consideration the two brain halves for using them in science teaching.

Keywords: teaching, strategy, integrated learning style of the brain, scientific concepts, science processes skills, and classroom- students

Introduction

Scientific concepts are the basis of scientific knowledge, and the increasing interest in teaching these concepts add value and meaning to the scientific course and material thus the learner feels that he has an important learning task . It also makes the study of scientific facts and access to them meaningful job.

Good defined the concept as an idea of a common element through which different groups or varieties could be distinguished. It is a general mental perception or just a situation, a scientific events or something (Good, 1973).

The importance of scientific concepts is that it works to classify both the things and events that make up our natural and social world under the titles which also contain a set of concepts with common characteristics. These concepts can also be divided into smaller units. Scientific concepts contribute to organizing and arranging the characteristics of the natural phenomena for building structured knowledge. It also contributes in synthesis of things and activities, in the interpretation of movements and sensations, and in the formation of generalizations on the basis of the relations between them that the mind deals with them more easily than dealing with information (Nelson, 1976 and Michaels, 1996 Banks, 1987)**.**

It can be said that it has a direct relationship to the way research, inquiry and thinking is used in each science, and they contribute to the reorganization of knowledge and its structure in the curricula and textbooks, so that concepts are axes, or centers of knowledge organization and basis (Bruner, 1960).

The scholars and the men of education were also concerned with the operations of science, some of whom considered it the basis for attention. First, for the teaching of science, Schwab, Gagne, and Tyler considered science processes to be the methods by which scientific knowledge was learned. Scientists such as Novak and Pearson were interested in scientific knowledge and science processes together to teach science. They considered science to be a dynamic interaction between science processes and results to gain new scientific knowledge, so scientists launched *Science Processes, Science Skills Lifetime* to solve and address the facts of daily life problems (Khalili, Haidar and Younes, 2004).

The acquisition of scientific processes is one of the main objectives of the teaching of science. They rely on scientific thinking, classroom activities and attitudes that require planning skills, appropriate guidance and direction, and face problems that make the student and processes react positively so it can be used in discussions and perceptions (Zeitoun, 2008).

Because scientists explore new knowledge and arrive at the results called science results using science methods, including science processes, the interest in teaching science must include scientific knowledge and processes of science, because science is actually a dynamic interaction between process and results and not just a description of natural phenomena, The skills of science processes on life-learning skills used to address daily scientific problems (Zeitoun, 2004).

The processes of science are represented by the ability of students to for careful observation, using the senses to collect information about things or events, and then compare the search for similarities and differences between things and the classification and classification of this information and the connection between them according to their characteristics, and the establishment of hypotheses and test hypotheses and access to generalizations and take advantage of these circulars in similar cases (Fatal, 2005.(

The learning process often focuses on the left side of the brain and neglects the right side responsible for talent and creativity. Students who are not trained in the use of the left side have difficulty learning school materials, especially physics and mathematics, based on logic, analysis and symbols. (Abdel Jalil, 2006).

The results of scientific and psychological research have shown that the brain is the base of the mind and its main focus. Hence, the brain is the source of human behavior and its source, where it affects and is influenced by human knowledge as the basis of cognitive activity. It is divided into two left and right sides covered by the cerebral cortex. The functional aspect of each is different. The left side has some types of activity, and the right part deals with other types of activity and is integrated into many activities (Zayat, 2000).

The results of studies on this subject revealed differences between the two in a number of higher mental functions. The left side performs verbal, analytical and logical functions. It works in a logical, explanatory and logical way. It focuses on causal thinking and mathematical reasoning, while the right segment specializes in recognizing and remembering sensory responses And the modes of thinking that lead to creativity, where the concentration of functions related to intuition, emotion, conscience, creativity, art and the use of imagination (Dossary, 2002).

The educational institutions, curricula and teaching methods suffer from a sharp weakness in understanding the individual differences among students in general, and placed most of the curriculum to suit all students without taking into account the individual differences and characteristics of each student, and is taught in a way of teaching that depends on memorization and conservation without regard to the teaching methods or patterns of learning and thinking for students. Students differ according to their abilities and different patterns of learning, so the brain is the real input to understand the differences (Khalil, 2004).

Therefore, the educational systems have trained and provided the skills of the left brain, such as mathematics, languages and science, on the arts and music and teaching thinking skills, especially creative thinking. Focusing on the skills of just the left side of the brain, educational systems reduce the productivity of thinking individuals because the mind works with two important principles: multiplication and repetition (Bozan, 2010).

The education system tends to rely on the activation of the left brain of the brain in the life tasks of analysis and reasoning, while the skills of the right incision are less used. De Bono (1995) points out that traditional education inhibits the right-thinking thinking skills and jumps from exam to exam, examines the processes performed by the left side of the brain, and this is a waste of human talent and ability (Clark, 2004).

The assumption that some students are not competent is not because of a lack of mental abilities but because of their patterns of thinking that do not conform to the patterns of evaluation and therefore we need to take into account the patterns of thinking of students if we want to reach and communicate with them. (Sternberg, 2004).

Shaykh (1999) argues that it is essential that educational plans take into account the characteristics of both brain pieces together. Otherwise, nonverbal learning, especially the realization of space and spatial memory, is important in subjects such as geography, science, engineering, etc.

The use of individuals for information in the face of problems is the use of left, right, or right brain functions in mental processes or behavior, and there are three. The patterns of learning and thinking are:

1- Right style: means the use of the right part of the brain as defined by Torrance and his assistants.

2- Left style: means the use of the left side of the brain as defined by Torrance and his assistants.

3- Integrated mode: means the integration of the functions of the two parts (left and right) of the brain.

In the field of science education and its role in the development of brain-brain functions, Hammam (2000) stated that science education can contribute to the development of an integrated pattern of learning and thinking patterns for students by focusing on research and inquiry in science teaching, by focusing on sensibility, to use it as a climate for development of the cognitive field, and by focusing on students' ability to visualize and produce comparisons.

Therefore, the content of the study should be chosen, organized and taught to suit the activities and functions of the two sides of the brain, especially in science. The authors of this pattern combine in their thinking the advantages of the right and left segments in an interactive and integrated manner at the same time.

In this age, we face tremendous scientific, technological and economic challenges and developments that have affected education in one way or another. Traditional pedagogy is not adequate for today's needs; students must be capable of learning, acquiring knowledge and keeping abreast of developments and challenges. This has increased the need to develop teaching methods in schools that take into account the learning patterns and ways of thinking for learners.

Al-Dulaimi (2005) studied the effect of the multi-talent program on the development of thinking patterns related to the right and left hemispheres of preparatory students. Using the Duncan post-test to identify the effect of the program, there were significant differences for the experimental groups using the integrated thinking pattern, while the students of the control group kept their thinking pattern according to the approved test.

In the study of ALHazmi (2006), which aimed at determining the effectiveness of using a proposed program in developing the right hemispheric learning method for the second grade students in Madinah, the study sample consisted of 56 students. The Torrance Scale was used for learning and thinking patterns for children. Questions and research hypotheses using the arithmetical averages, standard deviations and differences between the averages with the value of "T". Results of the study showed control of the left pattern of learning and thinking patterns among middle school students, then the integrated pattern and finally the right style. There were statistically significant differences at (0.05) between the average scores of the experimental group in the tribal and remote applications to test the patterns of learning and thinking in favor of the tribal application for the left pattern and for the post-application for the right and integrated pattern.

Walker's 1995 study aimed to develop the thinking skills and academic achievement associated with right and left hemispheres among African American students. The sample consisted of 68 students. After the implementation of the program, results showed a statistically significant difference and improvement in the skills of thinking and achievement.

Salmiza (2011) examined the effectiveness of teaching methods based on the stimulation of integrated brain functions in enhancing the scientific concepts of students in Newtonian physics in the context of the four physical education studies. The study sample consisted of 100 students from two secondary schools in Northern Malaysia. The program was effective in providing students with Newtonian physical concepts and showed that the majority of students following the teaching processes based on activation of brain function had greater ability to understand Newtonian physical concepts than the group that received the traditional teaching methods.

Al-Bawee and Al-Shammar (2012) conducted a study aimed at detecting the effect of the strategy of scientific stations in the development of science operations among the students of teacher training institutes. The sample of the study consisted of 54 students. The test of science operations showed a statistically significant difference between the experimental group (Scientific stations) and the control group (the usual method) in the development of science operations.

Al-Baali (2012) aimed to know the effectiveness of the periodic survey model. He showed that there were significant differences between the average scores of students in the experimental group and students of the control group.

In the study of Abu Lebda, Al-Moneim and Al-Naqa (2009), the aim of the study was to identify the effectiveness of the archetype in acquiring the skills of the science processes of the eighth grade students in Gaza. The study tool was a test for science operations. The study sample of 60 showed statistically significant differences between the average scores of the experimental group and the average of their peers in the control group in acquiring the skills of the science processes.

Al-Harrahsha (2012) conducted a study aimed at investigating the impact of the strategy of the counterpart in acquiring the scientific concepts and the level of performance of the basic science processes among the students of the fifth grade in Al-Mafraq. A total of 64 female students were enrolled in the first grade, divided into two groups. The first group consisted of (32) students who studied using the similar strategy. The second group consisted of 32 students who were also studied in the usual manner. The results of the study showed a statistically significant difference between mean scores of the students in the two study groups on the test of acquiring scientific concepts for the students who studied the experimental method.

Study problem

Despite the great interest in the development of science curricula and the methods of teaching, students often learn information in the form of memorization, without sufficient understanding of

their meanings, and thus not understanding or using them in operations that require application or analysis (Al-Zubin, 2010).

Some educational research indicated the need to improve science teaching methods. Students did not understand scientific concepts deeply, nor did they relate to cosmic phenomena, nor did they use scientific processes in research and inquiry to reach scientific knowledge systematically. The learning system tends to focus on the development of the left ventricle of the brain for analysis and conclusion in life functions, while the activation of right brain skills of visualization are less used (Samad, 2000). Therefore, the use of teaching methods based on faulty patterns The brain is integrated and the proper thinking of analysis, reasoning and creativity can be achieved using special strategies that may facilitate the acquisition of scientific concepts and processes.

The problem of the study is limited to the main question - what is the effect of teaching using a strategy based on the integrated learning style of the brain in acquiring the scientific *concepts* and skills of the science *processes* of the students of the class teacher?

Study questions

In the light of determining the problem of the study, the researcher tried to answer the following questions:

1- What is the impact of teaching using a strategy based on the pattern of integrated learning of the brain in the acquisition of scientific *concepts* among the students of the class-teacher?

2- What is the effect of teaching using a strategy based on the integrated learning style of the brain in acquiring the skills of the science *processes* among the students of the class-teacher?

Study limits and determinants

This study was limited to teaching the unit of mechanics of students of the grade teacher enrolled in the course of scientific concepts and methods of teaching in the second semester of the year 2015-2016 in the Faculty of Educational Sciences at the University of Jordan. The generalization of the results of this study is determined on the size of the sample and the nature of its selection, and the metrics of sincerity and steadfastness in application.

Study terms and definitions

The study includes the following terms:

Effect: "The change that experimental treatment can cause as an independent variable in one dependent variable". (Al-Saeed, 1997), and is defined procedurally as: the change made by the strategy used as a separate variable in the acquisition of scientific concepts and the skills of science processes.

Learning style: The way in which an individual learns to receive or analyze information and how to deal with problems in his progress (Farrell-Moskwa, 1992).

Learning style based on the use of the left side of the brain: learner preference for teaching methods that emphasise use of functions of the left side of the brain in the processing of information and address various tasks such as analysis and reasoning in educational situations.

Learning style based on the use of the right part of the brain: learner reliance on the use of the functions of the right part of the brain in processing information and dealing with tasks such as imagination, visualization, creativity, colors and vigilance in educational situations.

Integrated learning style of the brain: Learner uses brain functions of both parts together in processing information and addressing the various tasks required for effective learning.

The scientific concept: Meaning or understanding related to a particular word, phrase or process (Zaiton, 1996).It is measured by the mark obtained by the student in the test of scientific concepts of the curriculum of science for the seventh grade.

Teaching strategy that is based on the integrated brain pattern: Method of teaching science through which scientific concepts, processes and other forms of scientific knowledge are presented through a set of activities and educational experiences and integrated and organized assessment methods that encompass the integrated brain pattern of analysis, reasoning, imagination, perception, creativity, colors and contemplations in educational settings and others.

Acquisition: The formulation of knowledge through internal mental processes such as organizing the experience according to the learning style preferences of the learner, and the process of coding, giving it a characteristic that makes it ready for storage in the memory (Qatami, 2000). It is measured by the mark obtained by the student in the test of the scientific concepts and operations of the tribal and remote sciences.

Science processes: A set of mental processes, activities and skills used by the student to solve a problem, including observation, measurement, classification, conclusion, use of time and space relationships, prediction and use of numbers, communication to access generalizations and use these generalizations in similar cases. It is measured by the test of the science processes prepared for this purpose.

Students of the class teacher: Students enrolled in a course of scientific concepts and processes using classroom teaching methods of the Faculty of Educational Sciences, University of Jordan.

Study methodology

The study was based on the experimental method based on a semi-experimental design. The study included independent variables (teaching method and two levels). The strategy is based on the integrated pattern of the brain and comparison of the usual method of teaching and brain-based methods with dependent variables for acquisition of scientific concepts and science processes.

Study members

The sample of the study consisted of (60) male and female students of the regular teacher grade in the Faculty of Educational Sciences at the University of Jordan, divided equally into experimental and control groups. The sample of the study was deliberately chosen for the researcher's work in this college.

Study Tools

Testing the scientific concepts: The researcher prepared a 20 item test that includes the conceptual aspects related to the unit of mechanics and applied this test to the experimental and control groups.

The veracity of the test: It was presented to ten arbitrators from the faculty of educational sciences in Jordanian universities to ascertain the appropriateness of the articles of the tool to measure the acquisition of scientific concepts and the extent to which these concepts are represented in addition to verifying the accuracy of the wording and the clarity of the paragraphs.

Stability of the test: The stability coefficient was extracted using the Koder Richardson equation (Kr20) for internal consistency with a value of 0.81, which is within acceptable limits, indicating that the test has good stability indicators.

Difficulty and discrimination coefficients: The difficulty and discrimination coefficients for each test paragraph were calculated based on the survey sample, according to the Koder Richardson equation (Kr20). The degree of difficulty ranged from 0.37 to 0.68. The discrimination coefficients ranged from 0.20 to 0.50. Positive and within the acceptable range.

Testing of science skills: The test of science processes was prepared by the researcher to include multiple choice items to measure the following scientific processes: observation, measurement, classification, prediction, use of numbers, and communication. This test was applied as a pre-test then re-applied as the post-test. The marks on this test range from 0-20 marks.

Validation of the test: To verify the veracity of the test, it was presented to the professors of the University of Jordan as arbitrators. Some items were deleted or modified based on their observations. To determine the stability of the test, it was applied to a sample of 35 students from outside the study sample. The stability factor was calculated using Koder Richardson method (KR20) and the stability factor (0.68) is the statistical stability coefficient. Difficulty coefficients were calculated and ranged from (.20 to .43), and coefficients of excellence ranged from (.30 - .88).

Study results and discussion:

Results related to the first question, which stated "What is the impact of teaching using a strategy based on the pattern of integrated learning of the brain in the acquisition of scientific concepts among the students of the class- teacher?"
To answer the question, the arithmetical mean and standard deviations of the student scores in the experimental group and the control group were calculated for both pretest and post-test. The results are shown in Table 1:

Table 1
Statistical averages and standard deviations on the test of scientific concepts by experimental and control group members

		Post-test			Pre-Test			Group
Standard error	mean	standard deviation	mean	number	standard deviation	mean	number	
0.33	11.92	2.36	11.37	30	1.65	11.33	30	Control
0.33	16.85	1.13	17.40	30	1.74	13.53	30	Experimental
0.21	14.38	3.55	14.38	60	2.01	12.43	60	total

Table 1 shows that there are apparent differences between the arithmetic mean of the student scores in the experimental group and the control group for the scientific concepts test. In order to test the significance of the differences, ANCOVA was used for the student data. Table 2 shows results.

Table 2
Results of ANCOVA analysis of students' scores on the test of the post-scientific concepts of the experimental and control groups

ETA square	Statistical significance	Calculated F value	Mean squares	Degrees of freedom	squares Total	Source of variance
0.21	0.000	15.05	41.40	1	41.40	Pre-Test
0.62	0.000	92.44	254.23	1	254.23	Group
			2.75	57	156.77	error
				59	744018	total

The results shown in Table 2 indicate that there is a statistically significant effect at (α = .05) due to the teaching method. The value of (P) resulting from the analysis of the mono variance (92.44) is statistically significant (0.00) for the experimental group.

The magnitude of the effect was calculated to see how much the independent variable (strategy) interprets the dependent variable as the total score as shown in Table 3.

Table 3
Evaluate ETA and ETA to determine the impact size of the independent variable (strategy) in the dependent variable

Eta Squared	Eta	
0.62	0.45	(strategic group)

As noted from Table 3, the ETA value (0.45) is equal to the square root of the square ETA value, and by comparing the value of ETA squared, 0.1025) at the levels (0.01 - 0.14), we find that it is average, i.e. the effect of the treatment (strategy) is average, this mean that the strategy caused an average variation in the dependent variable. 0.2025 × 100% = 20.25%. This means that the treatment explained 20.25% of the variance in the dependent variable.

The research clarified that this result is due to use of the strategy that provided the student with an opportunity to develop his understanding of the scientific *concept*, which gives him the ability to apply the *process* in daily life and use it when needed in application, analysis and learning.

The strategy used allows building scientific concepts by working on investigation functionality and use of activities that integrate both of the two parts of the brain in processing information and dealing with various tasks such as analysis, reasoning, visualization, creativity, colors, dreams and vigilance in educational situations and apply these concepts in the reality of their lives.

The results of this study are consistent with the results of Salmiza (2011) and Dulaimi (2005), which found that brain-based teaching methods have achieved greater ability in accommodating and acquiring scientific concepts, and that most students have been able to understand and apply science better in their daily life as shown in the tested results.

Results related to the second question: "What is the impact of teaching using a strategy that is based on the brain integrated learning pattern in acquiring the skills of the science *processes* of the students with major of class teacher?"

To answer the question, the arithmetical mean and standard deviations of student scores in the experimental group and the control group were calculated on processes in the pre-test and post-test processes. The results are shown in Table 4:

Table 4
Mathematical mean and standard deviations of student marks
on processes in the pre-test and post-test

Standard error	Adjusted Mean	science processes Post-test		science processes Pre-Test		No.	Group
		standard deviation	Mean	standard deviation	Mean		
0.21	14.8	2.00	15.50	2.03	12.63	30	Experimental
0.21	11.93	1.87	11.23	1.92	10.90	30	Control
0.14	13.37	2.88	13.37	2.14	11.77	60	Total

Table 4 shows that there are apparent differences in the arithmetic mean and the standard deviations of the students' marks on the test of the tribal and post science processes between the experimental and control groups. The experimental mean in the test of the experimental group was 12.63 and the standard deviation was 2.03. The mean for the control group was10.90 and the standard deviation was1.92. On the other hand, the mean scores of the students in the experimental group who studied the strategy used were 15.5 with a standard deviation of 2.00, while the average of the students of the control group studied in the normal way was 11.23 with a standard deviation of 1.87. To illustrate the differences the analysis of common mono-variance ANCOVA were used as shown in Table 5.

Table 5
ANCOVA of The effect of teaching method on the science skills for the class-teacher students in the control and experimental groups

Statistical significance	F Value	Mean squares	Degrees of freedom	Squares Total	Source
0.000	83.98	102.79	1	102.79	Teaching method
		1.22	57	69.76	The error
			70	489.93	Total

Table 5 shows that there is a statistically significant difference at ($\alpha = 0.05$) due to the effectiveness of the strategy where the value of (P) = (83.98) and statistical significance (0.000). Differences were in favor of the experimental group. This indicate that the strategy contributed in development of students' skills in observation, measurement, classification, conclusion, use of time and place relationships, prediction, use of numbers, and communication. It enabled students of the experimental group to raise their scores in the test of science processes. The researchers also note that this result is due to the use of the strategy that provided students with the opportunity to use and integrate processes and operations of science and enabled students to interact with the scientific knowledge after observation and the use of scientific processes in the implementation of the activities prepared for this purpose. The results agree with studies by Al-harhaseh (2012), al-Baali (2012), Abu Libdah and Bafad Al-Menem and Al-Naqa (2009), which found that the strategy used in teaching contributed to the development of the skills of science operations in the study sample.

Recommendations

Based on the study results, the researcher recommends the following:

1- Adopt teaching strategies based on the integrated learning pattern of the brain and use this widely in science teaching.

2- Hold training courses for science teachers on both the concepts and processes of science, patterns of learning and thinking, and how to select activities that mimic the two halves of the brain.

3- Conduct further studies on learning patterns and thinking involving other variables such as trends, tendencies, motivation and scientific achievement in science and test the integrated learning pattern with other age groups.

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Stereotype threat and
predictors of perceived computerized exam anxiety among freshman in Saudi Arabia

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Abstract

Due to efficiency in production and evaluation, usage of Computerized Exam (CE) has increased (Hochlernert et al., 2011). With the utilization of this new method of assessment, educational researchers have focused on determining the users' attitude and level of anxiety, in this case students, toward CE. The existing literature includes comparison studies to determine which type of test (computer vs paper) produce more anxiety for students, however there is lack of research in determining which variables specifically contribute to Computerized Exam Anxiety (CEA). Studies may also lack generalizability as they are applied for a specific portion of specific classes (Prisacari & Danielson, 2017). The purpose of the present study was to examine the stereotype threat on females in CEA and to determine the predictors of CEA among college students. Authors also examined the mean difference in CEA among students in different tracks (science, engineering, health).

Keywords: Computerized exam anxiety, stereotype threat, technology in education, higher education, freshman, Saudi Arabia, private vs public, ICDL.

Introduction

As a result of the inclusion of technology in higher education, many educational institutions start to consider modifying the traditional examination methods to computerized one. As a consequence, a number of research studies were conducted to understand user's (teachers and students) perception to this new approach compared to the traditional one. McDonald (2002) argued that for statistical equivalence of scores to be considered for computerized and paper-based test, individual differences of test takers must be considered. A study by Jamil, Tariq, and Shami (2012), that focused on teachers' perceptions about computer-based vs. paper-based exam found that female teachers who have computer training certificate or degree, and teachers who have previous experience with computer exams were more positive toward computer-based examinations. Similarly, students' perceptions and attitude toward CE were presented in several studies.

When it refers to students' performance on computer and paper-based tests, a number of studies reported in the literature found no significant difference on students' performance between computerized and paper-based tests. A study conducted by Alexander et al. (2001) showed no significant difference in exam scores between students in a business course who completed the exam online vs. their peers who took a traditional paper exam in a classroom. In 2005, a review of 26 out of 44 studies by Paek (2005) showed that there are no significant differences in students' performance between computer and paper-based tests. A recent study by Boeve et al. (2015) conducted on psychology students to compare computer-based vs paper-based tests also found no significant difference in students' performance between both testing methods.

Computerized Exam (CE)

Computer and related technologies are considered powerful assessment tools especially after the intensive inclusion of technology in the higher education. There are many benefits associated with computer based exams in higher education such as the efficiency of the work, the possibility for an immediate grading and feedback, the flexibility in arranging test time and location, and reducing the number of items that either too easy or too hard for each individual examinee (Fritts & Marszalek, 2010). Further, computerized exams provide more accurate and reliable results compared to the other traditional paper methods (Conole & Warbuton, 2005). On the other hand, researchers reported some disadvantages. A computer-based exam can cause test anxiety for the examinees, which results in poor performance (Lu et al., 2016). For example, the inflexibility of the computer test mode in which students are not able to skip, review or even change the answer (Bodmann & Robinson, 2004; Firtts & Marszalek, 2010) and the increased temptation to cheat as students can access the information they need via internet (Stowell & Bennett, 2010). The possibility of a technical failure during the exam was among students' concerns. Thus, for effective administration of the CE; adequate facilities, assured system reliability,security and back up procedure in case of a technical failure are required (Boeve et al., 2015). Further, a study conducted with medical students found that "additional noise from the keyboard and missing habits normally present in a paper based exam" were reasons for students' objections to CE (Hochlehnert, et al., 2011).

CE and gender

Previous literature examined the gender differences in attitudes toward the use of computer in education. Findings were impacted by the time period when studies were conducted. A study by Dambrot et al. (1980) found that females had more negative attitude and scored lower in computer exams. An overview of the research from the last 20 years showed that females presented more disadvantages and more anxiety when learning with the aid of computer-assisted software. The author stated that this anxiety leads to differences in computer attitude and performance between males and females and related the female anxiety toward the using of computer to the deep socialization patterns of boys and girls with the stereotype of computers as a toy for boys (Cooper, 2006). This phenomenon is also known as stereotype threat. "Stereotype threat is being at risk of confirming, as a self-characteristic, a negative stereotype about one's group" (Steele & Aronson, 1995, p. 797). Research found that stereotype threat co-opts working memory resources thus making it difficult to perform certain mathematical tasks (Beilock, Rydell, & McConnell, 2007). Further, it was found that the negative stereotypes about females' ability in the mathematical performance negatively affected their math- related tasks (Keller, 2002). An earlier study also found that math self-concept was significantly related to test performance using CE (Kim & McLean, 1994).

Private vs. Public School

The education system of the school might impact the students' attitude toward the computer-based exam versus the paper-based exam. Generally speaking, students in private schools or rich school districts are more exposed to the use of computer and are more familiar with CE compared to their peers in public schools or schools in poorer school districts (Fritts & Marszalek, 2010). This exposure helps students to have an experience and be familiar and comfortable with the aid of computer-assisted software (Prisacari & Danielson, 2017). Fritts & Marszalek (2010) indicated that students with fewer opportunities with CE are at risk of developing a higher level of anxiety for CE. Further, a study by Boeve et al. (2015), emphasized the importance of students' practicing in order for them to accept and be familiar with the mode of CE administration. Thus, the familiarity with the use of computer and previous experience might impact an individual's attitude and level of anxiety toward CE.

Purpose of study

The purpose of the present study was to examine the stereotype threat on females in CE and to determine the predictors of Computer Exam Anxiety (CEA) among college students. The authors also examined the mean difference in CEA among students in different tracks (science, engineering, health).

Method and design

The preparatory year at this university offers an opportunity for incoming students to gain the skills necessary to maintain a healthy and successful university life in their respective majors. Students receive a computer class, in either first or second semester, to prepare them for the following years. However, the current movement at the university to transfer all preparatory year exams from paper-based to CE has caused a great deal of anxiety among the students. Preparatory year students are fresh out of high school, and they come in with differing levels of computer skills, and at times, with no previous experience with taking a CE. For instance, approximately half of the students in the current sample indicated having no prior experience with computers (N = 352). Therefore, it was proposed to examine the level of anxiety experienced among students in preparatory year studies to determine what factors prior to university attendance predict the level of anxiety experienced toward computer based exams. Priscari and Danielson (2017) in their recent study indicated that their studies generalizability could be limited due to the fact that it was conducted on a particular portion of particular class. To minimize this limitation, the current study did not focus on a particular test. It rather assessed students perceived level of anxiety toward CE in general.

Participants

The participants for the present study involved total of 700 preparatory year[3] students from a public university located in the Eastern Province of Saudi Arabia. Of these participants, 171 were males, and 529 were females. Average age of the participants was 18.5 years. Some 111 students reported studying in private secondary education institution, while 589 reported to have completed secondary school in public institutions. A total of 348 reported taking a CE before, and 352 reported not having any prior experience. In terms of their respective tracks, 139 were in health, 194 in engineering, and 367 in the science track. Participants reported to have 8.7 years of experience with computers on average, ranging from 1 to 19 years (*SD=3.63*). As part of their studies, 529 students were currently taking a computer class, while 171 students were scheduled to take it in the second semester.

Measures

A demographic questionnaire along with Computerized Exam Anxiety Scale (CEAS) was sent to students via electronic survey tool. CEAS, which was originally developed in Arabic, was developed by Fahad Alkhezzi (2013), and it measures students' level of anxiety toward CE. The instrument included 20 questions on 5-Point Likert-Type scale (e.g. 5= Totally applicable, 1=Totally not applicable). The instrument included 5 reverse coded items (Q6,Q7,Q17,Q18,Q19). The author reported internal consistency of .816 for the instrument. The internal consistency for the current sample was .919.

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[3]Preparatory year is the first year (foundation year) which students spend in the university after being admitted. Students then continue onto their respective tracks (health, science, and engineering) the following year.

Research questions

RQ1: Is there a significant mean difference in CEA score between males and females?

RQ2: Do years of experience with computers, type of secondary education (public vs private), prior experience with CE, having ICDL certification, and current involvement in computer class predict CEA?

RQ3: Is there a significant difference among tracks (engineering, science, health) in CEA?

Results

Table 1

Summary of T-test analysis comparing male and female students in CEA

Gender	N	M	SD	df	*t*	p
Male	171	54.23	16.43	1.26	-6.64	.000
Female	529	64.06	16.97	.74		

Female students reported having higher level of CEA (M = 64.06, SD= 16.97) compared to male students (t = -6.64, p < .001).

Table 2

Summary of simple regression analysis for variables predicting CEA (*N* = 700).

Variable	B	SE B	β
Type of Education	-4.40	1.68	-.09**
ICDL Certification	1.18	2.25	.02**
Involvement in Computer Course	-8.18	1.44	-.20
Previous CE Experience	-8.39	1.26	-.24**
Years of Experience	-.65	1.74	-.14**
R2		159	
F		25.65**	

* p < 0.05, ** p < 0.001

Simple regression analysis was conducted to determine if years of experience with computers, type of secondary education (public vs private), prior experience with CE, having ICDL certification, and current involvement in computer class predicted CEA. The results indicated that all but the current involvement in a computer course significantly predicted CEA.
Four variables accounted for 15% of the variance (R^2 = .159, F (5,681) = 25.65, *p*< .001). It was found that type of education (*β* = -.09, *p*<.009), ICDL certification (*β* = .02, *p*< .001), previous

CE experience (β = -.24, p< .001), and years of experience using computers (β = -.14, p< .001) significantly predicted CEA.

Table 3
One-way analysis of variance in CEA by track

	Sum of Squares	df	Mean Square	F	p
Between Groups	18583.48	2	9291.74	33.76	.000
Within Groups	191818.23	697	275.21		
Total	210401.71	699			

Table 4
Tukey HSD post-hoc comparison for CEA

(I) Track	(J) Track	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Health	Engineering	11.029[*]	1.844	.000	6.699	15.359
	Science	-.648	1.652	.919	-4.528	3.233
Engineering	Health	-11.029[*]	1.844	.000	-15.359	-6.699
	Science	-11.676[*]	1.473	.000	-15.135	-8.218
Science	Health	.648	1.652	.919	-3.233	4.528
	Engineering	11.676[*]	1.473	.000	8.218	15.135

* p < 0.05

One-Way analysis of variance indicated a significant difference in CEA among tracks (engineering, health, science) (F(2, 697) = 33.76, p< .001). Tukey HSD post-hoc analysis revealed that students in health (p< .001) and science (p< .001) track had significantly higher level of CEA compared to students in engineering track. No significant difference was observed between health and science (p =. 919).

Discussion

The current study, consistent with the previous studies, found that female students were more anxious toward CE compared to male students. This difference among genders is explained by the stereotype threat that the members of stereotyped group feel increased pressure to perform well so that they do not conform to the negative stereotype about their group (Fritts & Marszalek, 2010). Research indicates that self-beliefs and perceived ability to perform a task influence individual's actual performance (Pajares & Miller, 1994). Does stereotype threat really play as significant of a role as it is said to be, or what degree of the anxiety is caused by this phenomena? Even though this question cannot be answered with the current sample, it is evident from the large body of existing research that women do perform worse in subjects related to math and computers compared to men (Baloglu & Kocak, 2006). A study examined stereotype threat

among Black American college students found that, black American students received significantly lower grades and engaged less with the schooling process compared to white American students (Aronson, Fried, & Good, 2002). A similar study examined the positively stereotyped social identity of Asian students in quantitative skill and found that emphasis on ethnicity increases the pressure on students resulting in poor concentration and significantly impaired performance (Cheryan & Bodenhausen, 2000).

In our effort to understand what could be the potential determinants of CEA, we found that students' previous exposure and familiarity with CE and computer usage in general decreased the level of anxiety produced. Previous studies showed that familiarity with the use of computer play a significant role on reducing the level of CEA (Prisacari & Danielson, 2017; McDonald, 2002). Studies indicated that students who come from schools where they have been exposed to computer based instruction as well as CE are less anxious toward CE. The current sample included 111 participants who graduated from a private secondary education institution, and in line with previous findings, these students reported significantly lower level of CEA. A study conducted in an educational setting that is similar to the educational setting for the current study, indicated that level of experience using computers decreases amount of anxiety toward CE (Alkhezzi, 2013). In the current study, half of the participants (N=352) indicated not having any prior experience with taking CE, and these students had significantly higher level of CEA.

We found that the highest amount of anxiety was observed among students in science track followed by health and engineering tracks. The highest CEA score among students in science track could be explained by the results from the first two research questions. We found that female students and students who come from public schools had greater level of anxiety toward CE, thus demographics of the students in the science track reveal a student body that is predominantly female and public secondary school graduates (321 female, 46 male; 315 public, 52 private secondary school graduates). Second highest degree of anxiety was observed among health track students. Studies indicate a correlation between examination stake and anxiety-grade relationship (Putwain, 2008). The author found that students scored highest grade and reported lowest level of anxiety when the examination was mid-stake. Thus, student level of anxiety is influenced according to the importance of the test and consequence of performance in that respect. Students in health track must be placed approximately in the top 25% to be able to continue to a major in medicine because there is a quota. Students who do not place in the first 25% are given the option of choosing other health related majors. Mental health professionals provide psychological services to students at this university. They observe a great degree of anxiety among students in the health track. This high degree of anxiety is simply caused by the fact that the consequences for poor test performance are bigger for these students. Zeidner (1998) stated that test anxiety occurs when a student is concerned regarding the negative outcomes of an evaluation which could result in failure.

In conclusion, gender and prior exposure to computer usage influence the student level of anxiety in a significant degree. Therefore, it becomes a responsibility for higher education institutions not only to work toward lessening the effect of the stereotype threat, but also to provide opportunities for incoming students to be exposed computer usage to minimize CBE. Having the infrastructure in place where the technological issues are minimized is also a key in anxiety reduction. Institutions that choose to administer CE must take precautions and ensure the readiness of the students, faculty, and logistics for a fair assessment to take place.

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