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The Online Journal of Distance Education and e-Learning is an international journal in the field of distance education. TOJDEL is an online and peer-reviewed journal that accepts papers on all aspects of distance education. Research papers could be about, but are not limited to: distance education and e-learning.

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‘AN ENGAGING AND DIFFERENT EXPERIENCE’: BLOG POSTING IN A HUMANITIES AND SOCIAL SCIENCES TEACHER EDUCATION UNIT

Dr. Peter Brett

University of Tasmania, Faculty of Education

peter.brett@utas.edu.au

ABSTRACT

There is a relative paucity of detailed exemplars which reflect upon the use of blogging as a tool to examine pre-service teachers’ pedagogical development and which explore the nature of their thinking about blogging in specific disciplinary contexts. The purpose of this study was to examine pre-service teacher reflections about their practice through blogging in relation to a third year Bachelor of Education unit at an Australian university focused upon Humanities and Social Sciences education. Blog posting proved to be an effective way of promoting high quality practice, thinking, and reflection in relation to some of the key issues that the unit content sought to emphasise about Humanities and Social Sciences education. The pre-service teachers’ reflections on the positive features of blog posting picked up on the value of collaborative learning, the benefits for their own learning of responding to others, and the value of receiving specific feedback on how to improve their work. They also pointed to how they saw blogging as a resource for their future professional practice and as an outlet for creativity and thinking about the affective dimensions of assessment feedback.

INTRODUCTION

Blogging - a form of electronic journaling - has been identified as an effective means to help pre-service teachers to construct and communicate meaning from their experiences in asynchronous and on-line learning contexts (Black, 2005; Coutinho, 2007; Miller & Williams, 2013; Reupert & Dalgano, 2011; Rinke, Stebick, Schaefer, & Gaffney, 2009). Pre-service teachers can post their teaching and learning ideas and rationales for their peers, read different points of view, re-draft their work in the light of feedback, and justify their arguments as well as share academic resources which underpin their understanding. Blogging can be an effective method of connecting a community of like-minded learners to provide each other with encouragement, feedback, and support. Blogs also enable students to ask questions and exchange ideas (Meinecke, Smith, & Lehmann-Willenbrock, 2013; Richardson, 2010). Furthermore, there are positive claims made for blogging in educational contexts around its capacity to promote higher order reflexivity (Farmer, Yue & Brooks, 2008; Rettberg, 2009), critical thinking (Novakovich, 2016; Yang, 2009), and an enhanced sense of teacher identity (Kehrwald, 2010; Luehmann, 2008). However, there is a relative paucity of detailed exemplars which reflect upon the use of blogging as a tool to examine pre-service teachers’ [PST’s] pedagogical development and which explore the nature of PSTs’ thinking about blogging in specific disciplinary contexts (Noel, 2015: 618. Also Garza and Smith, 2015: 5). The purpose of this study was to examine PST reflections about their practice through blogging in relation to a third year Bachelor of Education unit at an Australian university (the University of Tasmania) focused upon Humanities and Social Sciences [HaSS] education.

It is worth underlining that the central drivers in designing the blog-posting assessment task discussed in this article were not deepening PSTs’ understanding of peer review, the power of reflexivity, the advantages of collaboration and communities of practice, or the benefits of blog posting. These were seen as valuable professional learning side benefits (although intentional teaching strategies were deployed to underline these value-added dimensions of the activity). Rather the working hypothesis was that the framework and genre of blog posting was likely be a productive and fruitful way of exploring and communicating key aspects of HaSS education understanding and of suggesting engaging learning activities in this curricular area. A blog posting assignment was a means to achieving this quite specific initial teacher education end. A learning approach was adopted that sought to engage the PSTs in complex, authentic, real-world assessment tasks which resulted in the creation of artefacts that represented their learning (Herrington, Reeves & Oliver, 2010).

Designing and assessing the blog post assignment

Good practice guidance points towards assignment topics having an appropriate scope and structure which provide students with a focus, but which also offer them some freedom of choice and a range of possible ways to demonstrate their emerging knowledge and understanding. For PSTs topics should also directly reflect curriculum requirements in order for the blogs to be seen as making a meaningful contribution to their professional learning (Meinecke, Smith, & Lehmann-Willenbrock, 2013). Additionally, educators need to put in place the building blocks of an effective learning community, with clear expectations outlined in relation to the nature of peer collaboration and engagement (Halic, Lee, Paulus, & Spence, 2010). To develop a strong online

blogging community, instructors are advised to specify detailed requirements concerning administrative and logistical arrangements, participation, assessment criteria, and the development of a unit-specific blogging community. They should also explicitly spell out the claimed advantages for learning and provide (and model) a sustained online teaching presence, by facilitating discussions and signposting key features of the designated learning (Kerawalla, Minocha, Kirkup, & Conole, 2009). All of these aspects of pedagogic good practice were implemented and applied within the PSTs' on-line learning platform for this unit with key messages further consolidated and underlined through lecture presentations, news items, recorded synchronous web conferences, discussion forums, and tutor reminders.

The learning outcomes for the HaSS education unit were fourfold:

- Demonstrate knowledge and understanding of content, concepts and skills required to teach HaSS education;
- Critically appraise HaSS education pedagogical approaches and curricula (including the work of peers);
- Demonstrate and develop communication skills appropriate for audience and purpose; and
- Reflect upon working collaboratively with peers and demonstrate adaptation of planning and thinking in the light of on-line involvement and feedback.

The specific task (Appendix 1) is outlined below.

METHODOLOGY

The research project was undertaken within the scope of a 'Reimagining Online Learning in Education' project being undertaken within the University of Tasmania's Faculty of Education. Tutors initiating innovations within their units articulated a teaching challenge which they sought to explore through action research. The challenge in this case was expressed as 'seeking to enhance the formative engagement of students around a blog posting assessment task'. In two earlier well-received and favourably evaluated iterations of the unit, also encompassing a blog posting task, relatively few of the PSTs had participated in offering feedback to their peers on draft blog posts (an opportunity built into the assignment) and (related to this) few of the PSTs had taken the opportunity to re-draft and improve their work in response to the formative assessment opportunities offered in the task. In this iteration of the unit, for the first time, a proportion of assignment marks was specifically allocated to the quality of feedback offered to others. Specifically, 20% of the pre-service teachers' overall mark for the task was devoted to 'Reflection upon working collaboratively with peers and demonstration of adapting planning and thinking in the light of on-line involvement and feedback' (See Appendix 2 for the assessment rubric).

The research followed conditions set out in a minimum risk ethics application, which granted permission to access the use of natural data produced by the pre-service teachers during the unit implementation, subject to only using data from participants who had given their consent and after the unit had been fully finalised. Of the 180 PSTs enrolled on the unit, n.= 28 gave permission for their data to be used. Of these 28 PSTs there was a preponderance of students from the top end of attainment (7 High Distinctions; 13 Distinctions; 5 Credit; and 3 Pass papers). Overall, however, achievement was good across the enrolled cohort with 65% of students attaining above Credit level for their final unit grade. Information about both the over-arching project and the specific unit project were posted on the relevant My Learning On-line (MyLO) learning platform news page. Constant comparative analysis (Strauss & Corbin, 2014) was deployed in a qualitative analytical study of the data which analysed the pre-service teachers' blogs alongside their reflections on the blog posting process. Qualitative data reduction strategies were used in order to identify themes through individual categorization and interpretation of the data.

As part of the wider project, the pre-service teachers responded to an online survey (The Pre-service Teacher Readiness for Online Learning Measure (PTROLM) with 18 Likert statements) near to the beginning of the semester to gauge their attitude to and 'readiness' for online learning. If the students were enrolled in more than one participating unit, they completed the survey only once. They were invited to complete the PTROLM a second time after the semester was finished. Of the 16 students who completed both the first and the second survey half of them had attitude gains to on-line study by the end of the semester. It was encouraging to find that all but one of the 28 respondents either 'strongly agreed' or 'agreed' that 'I think that my lecturer has a positive attitude towards my on-line learning', indicating that they had appreciated the inclusion of blog posts as an assessment task. In anonymous, centrally administered evaluations at the end of the unit several of the PSTs provided comments indicating their appreciation of the blogging task. For example, 'I really loved the idea behind the blogs - it has provided food for thought with regards to my own classroom and ICT for learning' and 'I enjoyed the formative assessment for AT1 and the creativity we could bring to the blogging task'. I Moreover 17 out of 28 students in the PTROLM survey 'strongly agreed' that 'Students can help each other with on-line learning'.

Pre-Service teacher comments on the benefits of blog posting and collaboration

The overall educational and pedagogical case for blog posting as being a beneficial form of student assessment was made eloquently and persuasively in the following three student observations:

‘Using the blogging website Wordpress was an engaging and different experience. Unlike other assessment tasks, it provided a platform for ongoing peer assessment and allowed us to make alterations to our blogs based on the feedback we received. As a pre-service teacher it is vital to be comfortable in both giving and receiving constructive feedback (Topping, 1998) as we are entering a profession that values sharing and constant improvement of practice. As such, I feel learning how to be part of a community of practice is an essential skill to develop.’

‘Through the creation of three blog posts on civics and citizenship education, history and geography/sustainability, I was able to provide, receive and respond to feedback whilst exploring the value of collaborative learning platforms and the impact feedback has on students.... Presenting the assessment through online blogs ignited a sense of excitement and engagement with the opportunity to creatively express my learning. I found that following others, and giving and receiving feedback, enhanced the learning experience and maintained my enjoyment towards the task.’

‘Being an online student means working in isolation. Engaging in peer feedback, on my blog and my contribution to other peers’ blogs provided opportunities for participation in each other’s learning, creating a greater sense of understanding and appreciation of peer perspectives. Peer feedback offered the opportunity to reflect on the work of peers and on my own work, leading to increased learning, new ideas and reflection on how my work compared with others.’

Since information on blogs is electronic, students are not temporally limited regarding when they can create and read posts. Blogs also archive posts and viewer contributions, which enables students to keep a record of their learning. The PSTs often supported their positive assessments of the value of blog posting with relevant references from the academic literature (e.g. Du & Wagner, 2006; Halic et.al, 2010; Kim, 2008; Noel, 2015).

The use of online blogging inherently brings with it an expectation to work collaboratively. There is a cumulative process of posting draft ideas, receiving feedback, and reflexively modifying and adapting ideas in the light of peer and tutor responses (Ertmer et al., 2007). Students generally commented positively on the collaborative peer review processes in the reflective component of their assignment. They valued the opportunity to view each other's work and were especially appreciative of the comments and suggestions they received from their peers and tutors on how to improve their work. Several of the students commented upon their experience of collaborative learning. For example:

‘The blogging experience proved an engaging assessment format and a refreshing relief from essay writing. The communal approach provided constructive comments for areas of need that might otherwise have been overlooked. Meanwhile, reading the work of others coincidentally provided “feedback” for my own writing.’

‘Wordpress creates a virtual learning community that enabled me to receive constructive feedback from my peers; furthermore, it enabled me to critically reflect upon each blog’s content and discover areas that needed adjustments (Keppell, Au & Chan, 2006).’

Another PST noted that ‘This assessment utilises Dewey’s philosophy of collaborative learning engaging students in sharing their viewpoints, and providing constructive feedback in a tolerant environment’. Moreover, one enterprising student took the notion of collaboration one step further in terms of also making connections to social media: ‘I was able to link my Wordpress page to my Facebook peers, this allowed my blog traffic to increase, therefore increasing my peer feedback.’ Like other blog spaces such as Edublogs and Googleblogger, Wordpress provides a personal writing space where it is straightforward to publish, share, and collaborate and it becomes natural for users to build connections and learning communities. As another participant put it, ‘It enabled a bond between students who may otherwise never relate, allowing for avenues of alternate thinking to be explored and new ideas to be shared’. Some of the specific benefits of blog posting identified in these students’ reflections merit closer scrutiny and exploration.

A resource for future professional practice

An unexpected but very welcome feature of the reflective responses to the assignment by some of the pre-service teachers was the links that they made projecting forward to their own use of blog posting as qualified classroom teachers working with students and parents in the future (See Barrs & Horrocks, 2014; Risinger,

2006). As one student put it, 'Posting my own blogs required me to think about strategies I could implement as a practicing teacher to facilitate students to become active and informed citizens.' This was consistent with one of the survey question findings which showed that 24 of the 28 respondents either 'agreed' or 'strongly agreed' with the statement 'I am confident about applying learning from an on-line course to a teaching context'. Some expressed this link to professional practice simply but effectively as a consequence of practice and experience. For example,

'Using Wordpress for the creation of blogs provided me with an authentic learning opportunity allowing a feeling of confidence in my ability to demonstrate blogging to students in the future'.

'I feel like I am walking away from this assessment task with practical and creative ideas that can be applied in the classroom. I can see how collaboration between colleagues can be a hugely successful tool when planning for student learning'.

But others were pleasingly specific in terms of some transferable ideas which they had taken away from the activity:

'Being new to the world of blogging, this experience has been a fabulous learning opportunity. Having preconceived notions of weekly communication with parents of my future class, I see blogging as a viable option. Morris (2013) has blogged to parents of her students for numerous years claiming the online communication format has developed into a fabulous tool with educational benefits. Some of these benefits I have seen through my own blogs and feedback: literacy skills; social skills; ICT skills; and community spirit.'

'Sharing ideas, resources, and opinions through online blogs posts provides a beneficial method for teachers to learn and gain knowledge to improve professional practice. Moreover, reading others' work can assist learning influenced by knowledgeable educators to broaden one's own thinking as observed through Louise Fitzpatrick's education blog site Tales from the Sandpit (Oliver, 2014).'

'After acknowledging the benefits of collaboration in on-line spaces it is important to transfer these ideas to students in a classroom context. Rosen (2010) argues that the vast majority of teenagers have created what critics are calling 'mindless junk' on the World Wide Web. It is the responsibility of us, as teachers, to harness this creative energy and turn it toward meaningful, education-related projects.'

The assignment extended the PSTs thinking about using Information and Communication Technology [ICT] to expand curriculum learning opportunities for students and also enhanced their appreciation of ICT resources that can extend and enrich students' learning and possibly enhance parental engagement (Australian Graduate Teaching Standards 2.6, 3.4, and 7.3, Australian Institute for Teaching and School Leadership [AITSL], 2011). It was encouraging that so many of the PSTs recognised and articulated the relevance and value of the blog posting task for their future professional practice.

Benefits of giving feedback

It has been argued that students who author comments on the blog entries of others experience an enhanced process of knowledge construction through participation in a collective environment of reflective learning (Hall & Davison, 2007). And Nicol & MacFarlane-Dick (2006) noted that providing critical and constructive commentary on the work of peers enables students to develop an improved understanding of criteria which can then possibly be applied to their own contributions. These findings were certainly mirrored in a number of the pre-service teachers' responses to this task. For example:

'Applying a criteria based framework to giving feedback seemed to activate and enhance perspective in my own thinking that I found empowering and useful when modifying and attempting to add value to my own blogs. I had to read, compare and question other people's ideas which challenged my own knowledge. In order to suggest modifications, I needed to ensure that my own understandings were of a higher standard, thus leading to increased learning. I naturally compared the standards of other posts to my own and as Liu, Lin, Chiu and Yuan (2001) propose, this motivated me to make improvements'.

'Throughout the peer review process I found that, as Lundstrom and Baker (2009) identified, I gained more through the process of reviewing than from being reviewed. It caused me to undertake a process of self-evaluation and reflection. It was through these reflections that I clarified and modified my blog postings to include more detail to enable the reader to understand what the lessons were designed to achieve for students.'

Some of the pre-service teachers were explicit about how and why they responded to peers in the way that they did. Most sought to identify both strengths and areas for development, often in the form of the ubiquitous feedback sandwich:

‘I employed Hattie and Timperley’s (2007) feedback structure by balancing positive comments with constructive examples to ensure my peers recognised the value of current drafts and identified the supportive nature of my suggestions. I was fortunate to predominantly receive similarly arranged feedback.’

‘As I preferred comments that provided direct correction I tried to do this for my peers also, as well as providing reflective and praising comments for their work where necessary. I tried to also include how the lesson could be extended further with the involvement of a variety of aspects including place-based learning, which is a topic that links with both education for sustainability and civics and citizenship education.’

The research literature tends to indicate that while socially valuable, affirming blog posts that solely praise and do not offer some criticality or challenge to ideas fails to lead to reflective practice (Chang & Chang, 2014). One student wrote insightfully about the benefit of approaching the drafting of feedback with a critically evaluative mindset superseding a social mindset:

‘While the social aspect of the peer review process is important to initiate reciprocal peer reviews it is important to critically evaluate feedback given and received in a way that does not let social relationships create biases. Utilising a method similar to de Bono’s (1985) ‘Thinking Hats’ could be an approach to help students put them in a critical evaluative mindset rather than a social mindset.’

While praise can build confidence, constructive criticism is more effective for creating opportunities to improve. The best feedback posts offered both components and the pre-service teachers generally recognized this:

‘I found personally ‘cognitive feedback’ or direct correction (Cheng, Liang & Tsai, 2015) was most helpful rather than the reflective or praising comments. These were helpful to know that I was on the right track but didn’t help in the improvement of my writing.’

The activity thus contributed to the process of moving PSTs from novice to expert assessors and offered a grounded and specific opportunity to support the PSTs to improve the quality, consistency, balance and tone of feedback they provided in collaborating with their peers (cf. Boase-Jelinak, Parker & Herrington, 2013 and Grainger & Adie, 2014).

BENEFITS OF RECEIVING FEEDBACK

In terms of receiving feedback from peers, a large number of participants found it a helpful process – ‘The support of other students was extremely valuable to my learning throughout the assessment task process, as you are able to bounce ideas off each other and collaborate’. Several reported examples of feedback which had led to them making changes to their posts in relation to teaching strategies, questioning approaches, or forms of student assessment:

‘After completing my blog postings, I found it helpful to have received feedback from my peers, that gave me an insight into ideas or sections I could change or add, to enhance my blog. I incorporated most changes that were suggested to me by my peers.’

‘Peer feedback enables students to receive advice and edit their draft to a higher standard prior to submission. This was certainly true in my second blog as I received valuable constructive feedback. The feedback enabled me to rework my Indigenous-focused lessons to become more focused upon the school itself and entwining a stronger civics and citizenship aspect. Another suggestion reminded me to include the voice of the Indigenous people themselves, an important consideration that I adjusted with the involvement of a local Elder.’

It was a specificity of responsiveness from peers that was most appreciated by the PSTs:

‘I was able to utilise the feedback I received to make improvements to the content of my blogs by including elements I had not previously considered. Peer feedback provided the insight that the chosen task in my first blog was too advanced and not engaging enough for the year level it was aimed at. My second blog did not create enough empathy for the people the students were researching, and my third blog required the chosen activities to have more depth.’

‘A conclusion was added to the Civics and Citizenship blog, questioning aspects were changed to allow for more open-ended questions to be asked. Added into the Geography post were curriculum connections, assessment activities and introduction activities to assess student’s prior knowledge and thoughts on the topic. Within the History post a reflection activity was added to gather students’ opinions and learning acquired from the activity.’

‘Suggestions were made and applied to improve the level of whole-class discussions within each of my blogs, such as guiding questions that promoted a deeper level of thinking and understanding, I found this a very helpful improvement to my lessons.’

Sometimes posts named-checked and specifically thanked the individuals who had made suggestions that they had picked up. For example,

‘Both x and y commented on my inclusion of the five ‘R’s of Significance, incorporated to demonstrate my understanding of the important criteria needed to ensure that what students are being taught is actually significant (Counsell, 2004). The feedback from v and z in my third blog on historical misconceptions stimulated my thinking about the importance of students’ understanding of stereotypes and acceptance of others.’

Other students referenced the benefits of accessing multiple perspectives and receiving more feedback than from the instructor alone and of being ‘exposed to a different type of thinking’ (cf. Guascha et. al, 2013; Liu & Lee, 2013).

Affective dimensions of blog posting

The blog posting task contributed to the creation of a collegial and social learning environment, characterised by participation and interactivity for both students and tutors. However, some PSTs were honest enough to admit to being worried about critical judgement from peers and consequential reduced self-confidence. In fact the blogging space was an environment where tutors did not report a single example of disrespectful or unprofessional comment or feedback. Nevertheless, several of the PSTs acknowledged the affective dimensions of giving and receiving feedback. Most did so giving due weight to the feelings of others on receiving what might be seen as critical feedback. For example: ‘When writing feedback to my peers I found it challenging to be tactful in the way I gave critical feedback as I did not want to depreciate their effort and ideas’. Others referenced their own feelings:

‘When responding to and receiving feedback from my peers I am quick to gloss over the good points of the evaluation and focus on the negative points that need attention. I think this adds to a negative self-image and I need to be more balanced by acknowledging my success with equal or greater weight to my failings’.

‘I found the opportunity to amend errors and incorporate the advice given by my peers was a daunting experience. The need to perfect my posts seemed greater and although I wanted to include many of the new ideas others had given me, I was hindered by the word count.’

One student made the connection to their future assessment practice with school students: ‘When responding to peer blogs, I was conscious to remember that their submissions were the product of their time, effort and ideas - as I would with my future students’.

Scope for creativity and good writing

Several of the PSTs mentioned a licence to be more creative as another positive element of blog posting – as one of them put it, ‘I was able to be as creative as I wanted through the use of words, images & video clips. I also found the more creative my blogs were the greater detailed feedback I received.’ The PSTs consistently used multimedia features such as embedded images, film clips and hyperlinks to support their ideas. They could experience for themselves the power of visual hooks and representations in supporting high quality learning. One noted that, ‘I found that the blogs provided a valuable format for adding relevant visual and/or media information to help bring the lesson plans to life for myself and my audience.’ Another PST noted that:

‘The blog posts were a fun interactive way to learn the content....Through the feedback I received, I was able to improve my blog posts and lesson ideas by making them far more engaging with the incorporation of online videos and activities suggested to me that I had not thought of.’

The blog posting process thus catered for individual self-expression, creativity and socially driven learning.

It has been argued that the process of blogging creates an awareness for clarity and provides a purpose for engaging writing to be created (Ducate & Lomicka, 2008; Rettberg, 2009). Gomez Delgado & McDougald (2013) inquired into the role that peer feedback played in the development of coherence in non-fictional blog writing. Their findings suggested that peer feedback in the context of blogging in an English teacher education programme in Columbia could act as a boosting factor in enhancing levels of coherence in text. Whilst few of the participants within this study’s assessment and blogging context explicitly reflected upon how the process might have affected their writing, the comparative brevity of the required text for each

blog (550 words) and the need to convey a range of learning ideas in this defined space placed a premium upon clarity, a sense of purpose, coherence and thoughtful word choices. Blogging disrupts the traditional writer-reader relationship, providing opportunities to make that relationship more interactive and dialogical and the PSTs were aware that they were writing for a more public cyber-audience than their normal assessment tasks. And unsurprisingly it was often the quality of writing that accounted for the highest quality student assignments. In reviewing summative assessment feedback to the seven PST participants who secured an HD mark, various feedback comments picked up on their quality of communication. Posts are described variously as ‘lively’, ‘fluent’, ‘engaging’ ‘rich’, ‘channelling local passion and enthusiasm’, ‘pedagogically sophisticated’, ‘a total pleasure to read’, exemplifying ‘deep exploration of the content matter’ and demonstrating ‘well-referenced reflexivity’ and a ‘skilful, compressed writing style’. All of these comments evidenced the vibrancy of writing deployed in the most effective blog posts.

Elements of high quality humanities and social sciences learning: Channelling the power of place and locality

The blog posting assessment task enabled a drawing in of local passions and expertise from PSTs based in diverse locations. Several outstanding blog posts developed themes and issues which drew upon the Tasmanian context to explore issues drawn from the primary HaSS curriculum. Examples included an integrated Year 5 History/Civics and Citizenship sequence of learning focused upon media debates around the recent sale of the Van Diemen’s Land company to a Chinese dairy company. The unit linked back both to colonial settlement in the far north west of Tasmania and to Chinese involvement in Tasmania past and present. A Geography/Civics and Citizenship unit helped Year 5/6 students consider the ‘Living City’ re-development plans for the north-west city of Devonport. And a Year 5 Burnie housing and streetscape project brought questions around heritage and urban development into interesting focus and had students looking at the local council’s ‘Making Burnie 2030’ and actively participating in contributing a youth voice to the city’s future vision. Another Geography post asked students to compare re-development plans for the iconic Tasmanian tourist destination at Cradle Mountain with comparable projects internationally. And a Year 4 Geography project had students exploring ways to improve a central Tasmanian river and promote awareness of the importance of sustainable waterways. A History post focused upon indigenous history linked to the school grounds of a Southern Tasmanian primary school. There was a nicely structured research activity finding out about the local Aboriginal group and a great commitment by the school to create a bush tucker garden and to display artefacts found on their site. The project planned environmental activities working within – and possibly re-naming - a nearby Lagoon Park. This was both historically valid and undertaken in partnership with local Tasmanian Aboriginal groups and elders. In different ways these PSTs were all planning to bring contemporary events and issues into the classroom and integrate curriculum content in engaging, active and experiential ways. This in itself had the effect of educating peers about historical, geographical and citizenship learning opportunities in diverse Tasmanian locations and a ‘soft’ building of pedagogical content knowledge in an area where PSTs regularly plead that they lack depth of knowledge

Ongoing challenges of blog posting pedagogy

It is not suggested here that blog posting pedagogy represents an unproblematic panacea. There are some research findings which are cautious about the potential of blog posting and alert to ongoing obstacles. Some evaluations of blog posting projects have reported low level or reluctant student participation in reflection (e.g. Kerawalla et. al., 2009). Hall & Davison (2007) found that only 20% of the blog postings they reviewed showed meaningful reflection by students. And other research shows that on occasions learners contribute minimally to their peers’ blogs, due to time constraints (Deng & Yuen, 2011; Halic, Lee, Paulus & Spence, 2010). These issues were sometimes visible within the blog posts within this teacher education unit but represented outlier concerns in the midst of generally high quality and professional responses. An elephant in the room was the tyranny of assessment instrumentalism. Full-time, time poor pre-service teachers might be undertaking four units of study per semester and balancing part or full-time work, academic study, and family commitments and assessment deadlines for their teacher education programmes which tend to come in clumps. This can create a culture of minimalism on the part of some students. Reflective discussion and professional interchange with peers can come to be seen as perhaps helpful and supportive but ultimately not a core priority. Some students acknowledged this quite frankly:

‘The peer review process for this blog task, as with any interactive assessment task, should have allowed for deep conversations on the topics being discussed within each blog post, as well as enhancing the blog before it was to be submitted and marked. However, due to people, myself included, posting their blog posts not long before the submission date, it lost some of this advantage.’

This is akin to ‘coming to class when everyone else has left the room’ (Black, 2005: 9). And some student feedback was mundane or restricted to the surface nuts and bolts of grammar, communication, and infelicitous

phrasing. Whilst this sort of administrative housekeeping had its place, it was evidently not the central point of the feedback exercise. A minority of students remained unimpressed with the feedback which they had received from peers: 'It seems that critical analysis is a skill that some reviewers lack. "Put more pictures in" is not helpful academic feedback, and often, in personal experience, peer feedback processes produce this sort of advice.' Overall, however, this assessment task prompted little shallow feedback.

Other more cautious literature in relation to blog posting rightly raises questions around the role of the instructor. On the one hand the ability to use blogs to generate authentic reflective conversation through peer feedback is difficult without proper facilitation from the unit co-ordinator and other tutors (Hall & Davison, 2007; Kerawalla et. al., 2009). On the other hand, this creates additional workload demand on instructors and may not represent optimal student-centred learning. One option (favoured by econometric university senior leaders keen to encourage tutors to ration their teaching time and commitments) would be complete instructor withdrawal from the formative feedback process. There is a pedagogical case for this - tutor feedback invariably tends to carry greater weight with students but it may make the on-line discussion space less democratic and put off peer responders. There is a grey area around the extent to which students discover the power of connectivism for themselves or are directed towards what this might mean by clear signposting and exemplification.

CONCLUSION

What did blogging add to a teacher education course? In addition to offering a different form of assessment and enhancing PST's engagement in participative and collaborative learning, it proved to be an effective way of promoting high quality practice, thinking and reflection in relation to some of the key issues that the unit sought to emphasise about HaSS education. In both giving and receiving feedback on their HASS planning choices, the PSTs were able to deepen their thinking about the planning, implementation, and detail of their design of historical, geographical, and citizenship learning opportunities for primary students. This experience in turn conveyed some powerful wider professional messages. As one PST summed it up:

'Receiving and providing feedback is a worthwhile process, offering pre-service teachers the opportunity to develop their knowledge of effective teaching pedagogies. Teachers in the classroom also benefit from collaboration with co-teachers, sharing ideas, experience, philosophies and pedagogies (Loughran, 2010).'

Overall, enjoyment and satisfaction were the main feelings communicated in the PST's reflections – with this participant's response being quite typical:

'This assignment was enjoyable for a number of reasons: it allowed us, as pre-service teachers, to exhibit our own ideas and to share these with people who would be able to guide and assist us in turning these ideas into activities and learning opportunities that we could use in real-world classrooms.'

Future iterations of this unit will seek to do even more to encourage a culture of discussion which values the creation of 'a text of talk' for its own sake and sense of involvement in an emerging group of professional practitioners. One way to do this would be to share different anonymised good practice examples of reflective talk and feedback from past cohorts of students.

The PSTs' own reflections on the positive features of blog posting picked up on the value of collaborative learning, the benefits for their own learning of responding to others, and the value of receiving specific feedback on how to improve their work. They also pointed to how they saw blogging as a resource for their future professional practice and as an outlet for creativity and thinking about the affective dimensions of assessment feedback. Blogging as an assessment tool is thus recommended enthusiastically to fellow PST educators, particularly if the practice will bring freshness and variety to a programme. In an article giving voice to student views on blog posting it is appropriate to conclude with an articulate testimonial to the benefits of blog posting through a pre-service teacher's eyes:

'The blog posting and peer feedback process utilised in this assessment provided an invaluable opportunity for personal development, learning and growth. The task of posting my work in a public forum, and then providing my peers with feedback, created opportunities to think critically about my own and other people's work, while also developing my overall knowledge of each topic. Blogging as a form of online journaling for pre-service teachers, is an effective method of connecting a community of like-minded learners to provide each other with encouragement and support'.

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Appendix 1

Assessment Task 1: Three weekly blog postings + participation and reflection on the peer review process

This task requires you to create three 550 word blog entries using Wordpress as the platform for your blog. Around 20% of your mark will reward the quality of your feedback to others and your reflexivity in responding to peer and tutor feedback. There is a specific topic for each of the three blog entries. In each case you are to refer to at least four academic texts or journal articles that have informed your thinking. You should only use a limited number of direct quotations, but they must be referenced correctly and they must not make up more than 10% of the post.

Week 2 (Civics and Citizenship):

There is an argument that civics and citizenship education is not worthy of the name without including an active citizenship, participative, community involvement and/or make a difference dimension. Outline an active citizenship project - for a primary year group of your choice - drawing upon the draft Civics and Citizenship curriculum for Years 3-6 or the Early Years Learning Framework (from ages 3 to 7) which links to a current contemporary issue in your local area. Select an issue where you have a passion and interest, there is a clear curriculum validation, and students can be engaged and enthused.

Your blog post – in addition to its outline of teaching and learning ideas - will need to ensure that you convey a deep and nuanced understanding of the meaning(s) of ‘active citizenship’.

Week 3 (History and Civics and Citizenship education):

Develop a Year 2 or Year 5 History project which explores, investigates and ‘activates’ the significance of some aspect of the past in the present. The concepts of significance, empathy, and perspectives are identified as key historical concepts to address within both year groups. Your blog post challenge is to bring the curriculum language to life through outlining overview plans for a local history project that makes meaningful and exciting connections between History and Civics and Citizenship education. You can assume that you will be able to include a field trip or learning outside the classroom opportunity.

Weeks 4-5 (Geography/Sustainability): Choose ONE example of a Geography/Sustainability theme for ONE year group from ages 4-12 that you would like to develop. Explain how you could assess at least TWO dimensions of students’ Civics and Citizenship knowledge and skills in Geography or Education for Sustainability lessons or learning experiences devoted to exploring this theme. The more engaging, active, interactive, community-oriented, real, and/or participative the better!

In addition to creating these three blog posts you should provide feedback to at least three of your peers and include evidence of this feedback in your final assignment. You should also include 350 words of reflection on how you amended your own blog posts in the light of feedback received and your thoughts upon the value and processes of feeding back to others. This component of the assignment is weighted at 20%.

Your blog posts are assessed within ‘Wordpress’ – so you will need to provide an accurate, working web link on your cover sheet/template. Please look at the assignment rubric carefully.

You are strongly advised to have completed first drafts of your three blog posts at least two weeks before the submission date. This will ensure that you allow yourself enough time and space to provide feedback to peers and to adapt/revise/improve your own blog posts in the light of feedback received.

Appendix 2 – Assignment Rubric

Assessment criteria	HD: 80 – 100	DN: 70 – 79	CR: 60 – 69	PP: 50 – 59	NN: <50
1. Demonstrates knowledge and understanding of content, concepts and skills required to plan and teach History, Geography, and Civics and Citizenship education (20)	Highly detailed and creative planning for student engagement across the three blog posts. Provides an insightful, critical and well-argued framework for curricular and pedagogical decisions.	Thorough and thoughtful planning for student engagement across the three blog posts. Provides a critical and well-organised framework for curricular and pedagogical decisions.	Well-organised, conscientious planning for student engagement across the three blog posts. Provides a coherent framework for curricular and pedagogical decisions. A workable and realistic translation of curriculum documents into classroom learning activities	Some relevant planning for student engagement across the three blog posts. In justifying planning considers some curricular and pedagogical decision-making factors in broadly sensible ways.	Partial and/or basic understanding of the key concepts of the unit. Relatively simple (or uneven) planning for student engagement across the three blog posts. Describes what is planned rather than discussing the reasons for the approaches adopted. The organization of learning lacks coherence.
2. Critically appraises HaSS education pedagogical approaches and curricula, making effective use of the relevant research and professional literature.(20)	Demonstrates excellent use of research and professional literature in appraising HaSS pedagogical approaches and curricula. Shows a sophisticated understanding of the essence of historical, geographical, and citizenship pedagogical content knowledge ([PCK]. Significant and thoughtful engagement with a wider academic literature.	Demonstrates good use of research and professional literature in appraising HaSS pedagogical approaches and curricula. Shows a thoughtful understanding of the essence of historical, geographical, and citizenship PCK. Good engagement with a wider academic literature	Demonstrates capable use of research and professional literature in appraising HaSS education pedagogical approaches and curricula. Shows a sound understanding of the essence of historical, geographical, and citizenship PCK. Engages with wider academic literature in appropriate ways	Some attempt to link theory with practice, with inconsistencies in the effectiveness of establishing this dialogue. Some relevant use of research and professional literature in appraising HaSS education pedagogical approaches and curricula. Some evidence of deployment of relevant wider reading.	Limited use of research and professional literature in appraising HaSS education pedagogical approaches and curricula. Limited and/or unpersuasive analysis of curricular and pedagogical planning decisions. Inadequate wider reading.
3. Demonstrates professional reflexivity and creativity/imagination in applying curriculum content to primary classroom contexts (20).	Demonstrates excellent critical and professional reflexivity in applying HaSS pedagogical approaches and curricula. Sophisticated and rich translation of curriculum documents into classroom	Demonstrates effective critical and professional reflexivity in applying HaSS pedagogical approaches and curricula. Lively and active translation of curriculum documents into classroom	Demonstrates sound critical and professional reflexivity in applying HaSS pedagogical approaches and curricula. A workable and realistic translation of curriculum documents into classroom learning	Demonstrates some critical and professional reflexivity in applying HaSS pedagogical approaches and curricula. The lessons would make some sense in a classroom context and have some solid curricular justification. Some effort to	Only basic critical and professional reflexivity in applying HaSS pedagogical approaches and curricula. The organization of learning lacks coherence. Little awareness is

	learning activities. A rich and persuasive appreciation of the possibilities of active and integrated History, Geography and Citizenship is conveyed.	learning activities. A well-argued sense of the possibilities of active and integrated History, Geography and Citizenship is conveyed.	activities. A professional and grounded sense of the possibilities of active and integrated History, Geography and Citizenship is conveyed in the annotation commentary.	demonstrate incorporation of active and integrated History, Geography and Citizenship – possibly inconsistently realised.	demonstrated of what makes for effective History, Geography or Citizenship learning.
4. Reflection upon working collaboratively with peers and demonstration of adapting planning and thinking in the light of on-line involvement and feedback (20).	Reflects deeply and intelligently upon the process of collaboration and the value of feedback in planning learning sequences. Impressive evidence of sustained involvement within the on-line learning environment responding to the work of peers and of adapting thinking and planning in creative, interesting and exciting ways.	Reflects critically upon the process of collaboration and the value of feedback in planning learning sequences. Good evidence of involvement within the on-line learning environment responding to the work of peers and of adapting thinking and planning in professional and meaningful ways.	Provides quite thoughtful observation and reflection on the process of collaboration and the value of feedback in planning learning sequences. Shows evidence of conscientious and well-informed involvement within the on-line learning environment responding to the work of peers. Responds sensibly and coherently in adapting planning in the light of feedback.	Demonstrates evidence of working with others in sound and sensible ways in planning learning resources. Some appreciation of the value of feedback. Shows some involvement in the on-line learning environment and provides some evidence of adapting planning in the light of feedback.	Shows little or no evidence of having engaged with peer feedback in planning learning sequences. Little or no evidence of participation in the on-line learning environment in terms of providing feedback to peers, or of adapting planning in the light of feedback received from peers.
5. Demonstrates communication skills appropriate for audience and purpose of a blog posting drawing upon an appropriate academic literature. Deploys appropriate academic writing conventions and APA referencing (20)	Highly engaging and precise writing and communication. Impressive capacity to use ICT in a creative and effective manner to add to the appeal and rigour of the posts. Accomplished use of APA referencing conventions and accepted conventions for scholarly writing,	High-level clarity of communication. Uses ICT effectively to add to the appeal and rigour of the posts. Enthusiasm channelled with clear thinking. Accurate use of APA referencing conventions, spelling, grammar and different formats as appropriate for the assignment.	Appropriately structured writing. To be awarded a credit the student must demonstrate through their blog postings a sense of being engaged in the unit. There will be an enthusiastic energy coming through in the writing. Some minor inaccuracies in the use of APA referencing conventions, spelling, grammar.	Appropriately structured writing. Meaning usually but not consistently clear. The blogs are fairly basic – minimal colour, images, links. A few inaccuracies in the use of APA referencing conventions, spelling, grammar.	Does not meet the minimum expected requirements of academic writing or communication in a HaSS context. Little thought, time or energy has gone into the blog postings. Referencing is inconsistent and/or incomplete.

DESIGNS OF OPEN AND DISTANCE LEARNING (ODL) EDUCATION: CASE OF MALAYSIA INDUSTRY-FOCUSED DOCTORAL STUDIES

Kok Yaw Wong
kokyaw.wong@qiup.edu.my

ABSTRACT

The innovation of higher education is assuming a larger role in national economic development which has significant contributions to private and public sectors. Open and distance learning education (ODL) is receiving good feedback from many people who aim to pursue postgraduate studies. However, many graduates are found to have difficulty in fulfilling the industry expectation and societies are concerned about marketability of industry-focused doctoral studies. There is an educational dissonance whereby the quality of graduates is getting lower and they have no industrial needed knowledge to enhance business and organization performance. Data is collected from 100 employers based at Kuala Lumpur, Malaysia. Findings from this study are important to provide guideline and vision for education provider to design a better industry focused educational system.

Keywords: doctoral studies, industry-focused, marketability

INTRODUCTION

Industry driven doctoral education curriculum is becoming important in today society which brings research to new era. Research done by Finish Metals and Engineering Competence Cluster (FMECC) has proven that this curriculum is capable to create new solutions and implementing results effectively to diverse industries. It can help to develop better opportunity for innovation (FIMECC, 2014). Besides, industry driven education can target the needs of organization as the Malaysia economy has grown significantly. Open and distance learning (ODL) has provided great opportunity for adult learners to pursue higher education especially in postgraduate studies (Carlsen, Holmberg, Neghina & Owusu-Boampong, 2016). Many busy working adults are preferred to enroll in ODL study to balance their work-and-study life.

The innovation of higher education is assuming a larger role in national economic development which has significant contributions to private and public sectors (Shaffer, 2015). Malaysia's economy has grown in fast pace since year 2010. It is one of the 13 countries identified by the Commission on Growth and Development that recorded the strong expanding in average growth rate. Its economy grew by 6 percent last year and continues to post solid growth rates (World Bank, 2015). The growth in economic development has boosted job opportunities in societies. Organization is looking for talents and professional for better job-fit. According to Department of Statistic Malaysia (2015), the labor force participation rate was increased by 0.3 percentages for March 2015 and 0.8 percentages higher when compared to year 2014. Higher education institutions play role as agent of transformation in Malaysia to face local and global challenges (UNESCO, 2012).

However, many graduates are experienced difficulties in getting better job. Besides, many of them are holding the jobs that are not correspond to their qualification and discipline. Minister of Higher Education (2015) figures out there are more than 500 institutions which including universities, college universities, college, and others with a total number of more than 748,797 students enrolled in higher education since year 2010. Many countries are on the track to knowledge based economies where incorporate the research and innovation into the organization to produce better outcome (Peters, 2011). Doctoral is seen as one of the factors for competitive advantage which is not only for academic but also widely applies in multi-industries. University of British Columbia has viewed the important of graduate students as a trend for global job market. It is important to transfer technical skills to industry which 60%-70% of Canadians with doctorate qualification do not pursue academic careers (Statistic Canada, 2011). There is educational dissonance whereby the quality of graduates is getting lower and they have no industrial needed knowledge especially for business and organization performance.

ISSUES FOUND IN ODL DOCTORAL CURRICULUM

Market demand for industry doctoral (e.g. Doctor of Business Administration, DBA) is getting important in the process of national and organizational development. In this competitive environment, employers are strived to survive by putting more effort on innovation. Knowledge is the key to enhance the performance and keep the organization competitive in fast changing market conditions. Besides, employers need to produce value added capabilities in human capital in order to strengthen the market position (Chang, Ahmad, Ibrahim & Kho, 2012). Therefore, a well-designed industry doctoral education is very important to transform more knowledgeable and skillful human resource.

Previous studies have shown that the demand for industry doctoral is growing in current market. According to the research done by Association of Universities and College of Canada (2011), the number of graduate students has grown significantly faster and the number of doctoral students is getting increase sharply globally. However, the educational development has been questioned by many employers due to the inability of graduates to apply the knowledge into their work. Employers prefer practical knowledge which can solve the business problems but not just the fundamental theories that learn from school. It can lead to graduate unemployment issue in Malaysia (UNESCO, 2012). Most of the graduates with little or no industrial or commercial experience have difficulties to apply the knowledge. National Graduate Employability Blueprint (2012-2017) prepared by Ministry of Higher Education of Malaysia has mentioned the challenges identified by employers relation to their employees which “mismatch of skills” consisted of 30.2%, “inability to solve problems” 25.9% , “insufficient dept of skill knowledge” 23.8%. The concerns about the ability of graduates to work in organization has raised significantly in recent years due to some factors such as the competitive environment, rapid changing marketplace, production cost and resources scarcity. Therefore, it is the needs to design and develop industry driven education to meet the employer’s expectations.

Besides, the educational developers and academics need to understand the factors contribute to the marketability of industry driven education and their implication for institutions, organizations and academic practice in order to develop better qualified graduates (Mills, 2009). The expansion of higher education is affecting the labor market especially the concerns about level of graduate unemployment (Ismail, 2011). The design of doctoral study in ODL education is very important to address this issue since more people are pursuing doctoral studies. Employers are preferring industry driven doctoral graduates and DBA has becoming trend for many working adult especially senior executives and managerial personnel. This kind of doctoral education is aim to produce graduates who are prepared for challenges of real word by applying industry knowledge.

OBJECTIVE AND SIGNIFICANT OF THIS STUDY

This study is important to address the significant factors of industry driven doctoral education to its marketability. It has been proven that higher education can lead to better national transformation. It also can improve the economic performance to enhance the global competitiveness. Employers are looking better talents by expecting graduates are able to apply industry knowledge. Therefore, the DBA graduates are becoming the good human resource for any organization. By understanding the factors that contribute to the marketability of doctoral graduates, it will be able to produce sustainable DBA graduates through the design of an innovative industry driven doctoral education curriculum. Gradually, the findings from the study can provide fundamental information and hopes to lay the groundwork for future research while also offering practical recommendations to educators and academics on how to deal with better curriculum design.

LITERATURE REVIEW

Industry Driven Doctoral Education Curriculum

Industry driven doctoral gives opportunity for researcher to resolve work related issues. This kind of postgraduate studies has brought the positive result to organization by addressing the problems and come out the solutions for real situation. It also provides movement for sustainable growth of economy by contributing doctoral knowledge in problem solving. Besides, it is more application oriented to current industry and more inclined to knowledge enhancement. Industry driven doctoral may result in better organization performance, effectiveness, efficiency and long term competitiveness (UUM, 2013). This doctoral education also focuses the studies and research on industrial issues. Education development toward industry driven is getting intention of most employers. Employers are looking at the graduates’ contribution to concrete business problems and generate model that explain and apply into the specific problem (Graf, 2015).

Doctor of Business Administration (DBA) and its Marketability for Graduates

University of Liverpool (2015) stated that DBA is a professional doctorate and equivalent to PhD where it is more to advance professional practice. This doctoral program is addressing practical business problem which is more preferable by employers. DBA has a very good career outlook in diverse sectors no matter private, public, organizations, higher education, research institutions and others. Graduates can involve in senior managerial positions, academics, consultants and practitioners. According to the United States Department of Labor, Bureau of Labor Statistic (2015), DBA employment is expected to grow 11 percent from year 2012 to year 2022 in global market. This phenomena is also applies in Malaysia employment (UNESCO, 2012). Besides, when looking into salary expectation, DBA graduates salaries are very depending on the industry and duties but generally can earn higher income. This survey is done by PayScale.com who focuses at global marketplace.

DBA graduates are in high demand due to the leadership skills, business theories and decision making ability (Cadiz, 2015). Graduates also have wide job opportunities and better career improvement by applying the knowledge acquired from course.

Independent Variable (IV₁): Program Structure

H1₁: Program structure is significantly influenced the marketability of doctoral graduates.

Education providers have to apply product development strategy by modifying the product to meet with the expectations of industry. This modification is refers to the design of program structure. Program structure always will affect the quality of a particular course or study. The design of the program will determine the standard and level of knowledge graduates have learnt. It will decide the graduate's ability to apply the knowledge into real industry. Therefore, the program structure is related to the marketability of DBA graduates. Industry driven education is also the road to success for all industries including manufacturing which has been a priority for the National Asphalt Pavement Association (Slater, 2013).

Employers believe that graduates can help the organization to change and enhance innovation to keep competitive. Some well known multinational corporations even sponsor their senior managerial personnel to pursue DBA or other industrial doctorate program (Bureau of Labor Statistic, 2015). They agree that DBA can help the organization to solve business issues and the solutions can lead to long term benefits. However, employers are looking for those graduates who can apply the industry knowledge but not just theoretical knowledge when deal with business matters. It is also about the demand driven education and training for employability which graduates are needed to have strong knowledge to develop industry issue solutions to enhance their marketability (UNIDO, 2011).

Program structure of industry driven education has strong relationship with marketability of graduates. There is a shift to develop industry based curriculum which can fulfill the requirements of business stakeholders at all levels in many advanced countries such as United States (Baumann, Harfst, Swanger, Saganski, Alwerfalli & Cell, 2014). It is also refers to the developing of competency based education from providers to help DBA graduates to be employed. Besides, in order to increase the marketability of graduates, many employers will engage in curriculum development to help educators design better program structure that meet the industry requirements (United States Department of Education, 2012).

Independent Variable (IV₂): Employer Readiness

H2₁: Employer readiness is significantly influenced the and marketability of doctoral graduates.

Employer readiness in hiring has strong relationship with marketability of DBA graduates. Employers will decide the graduates' employment by looking into several important factors. A survey done by University of Washington (2012) regarding the graduate level employments on global firms has shown that around 20% employers will likely to consider doctoral degree candidates. Besides, business most of the employers are looking for the doctoral graduates with business major. In other words, DBA graduates are most likely to be chosen by global employers compared to other doctoral majors. It has proven that the marketability of DBA graduates is very depending on employer readiness on the quality and industry knowledge learnt by graduates. When comparing to other majors, business administration seems to have largest contribution to employers due to its abilities to solve business and organization issues.

Besides, the graduates marketability also influence by employers' perception on return on investment (ROI) (Alton & Van Fleet, 2009). Graduates employment has viewed as high cost for employers in term of high salary compensation. Therefore, employers will make careful selection on doctoral graduates and it can affect their readiness. Many employers have the experience of selected graduates are not capable to match their expectation. It has created a strong impact on graduates' marketability.

According to report prepared by St. John's University (2013), employee engagement in student career readiness is useful to enhance employer's readiness to hire graduates. Employees are encouraged to assist graduates in becoming more career ready during internship. It will increase their career readiness and better meet with the employers' expectation. DBA is designed for organization senior executives by focusing industry driven knowledge and skill. Research done by DBA graduates is useful to address industry issues and the solutions developed are useful to enhance organization performance. Therefore, this curriculum is preferred by employer. The higher readiness of employer will lead to better marketability of DBA.

Independent Variable (IV₃): Academic Performance

H3₁: Academic performance is significantly influenced the marketability of doctoral graduates.

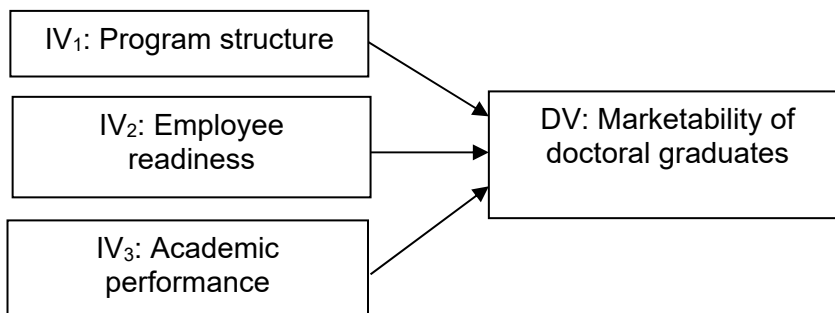
Academic performance can affect the marketability of DBA graduates by looking at the graduates’ knowledge and applied skill requirements for employees’ readiness (Conference Board, 2006). The increase in educational level in labor force has lead to higher requirement and expectation from employers. Employers have viewed professionalism, critical thinking, problem solving and applied skills as the criteria for employment.

Graduates academic performance can link to their analytical skills. DBA is a mix mode doctorate study whereby students are needed to go through some business related subjects and conduct a research that address the industry issues. It is a design of an innovative industry driven doctoral education curriculum. Therefore, all the subjects and research project are designed to understand and solve business problems. Graduates need to have strong problem solving skills to go through the assignment and research. If the graduates can achieve good academic performance, it can be concluded that they are exercising excellent problem solving skills in answering the assignments (Poropat, 2011). In other words, graduates with outstanding academic performance will show good analytical skills in contributing to develop solutions for business issues (Keister & Hall, 2010). Employers will perceive that graduates can meet with their expectations by applying knowledge to enhance organization performance.

Besides, DBA graduates with good academic performance will show good self discipline. They need to go through some tough projects and research in order to complete the whole study. This hardship has provided an opportunity to train their ability skills on problem solving, critical thinking, time management and other soft skills. It can enhance their marketability because employers might perceive these kinds of graduates are talents and beneficial to organization Wenz and Yu (2010) found that graduates with higher academic performance are better for career specific skills. They are employers’ choice by having stronger marketability compare to those with lower academic performance when lack of industry experience.

PROPOSED CONCEPTUAL FRAMEWORK

This framework identifies the relationship between the Independent Variables (IV) [IV₁: Program Structure, IV₂: Employer Readiness, IV₃: Academic Performance] and Dependent Variable (DV) [DV: Marketability of DBA graduates].



RESEARCH METHODOLOGY

Quantitative research will be conducted in this study as it is often used to collect and analyze based on numerical data, and generalize the results from large samples (Lodico, Spaulding & Voegtle, 2010). The target population for the study was employers that hiring DBA graduates to fill up managerial positions. 100 companies from Kuala Lumpur, Malaysia are selected as the primary setting for this study due to higher concentration of companies in Kuala Lumpur. By using these relevant sampling locations, more accurate information could be generated from this survey. Questionnaires are given to the targeted respondents. Probability sampling will be applied for this research and multiple regression analysis is adopted to test the relationship between the independent variables and dependent variable by using SPSS.

DISCUSSION AND CONCLUSION

Figure 1: Multiple Regression Analysis: Model summary

Regression Statistics	
Multiple R	0.776
R Square	0.602
Adjusted R Square	0.597
Standard Error	0.4633
Observations	100

The value of correlation coefficient (R value) for this study is 0.776 which fall under range of ± 0.71 to ± 0.90 . Therefore, the relationship between independents variables and dependent variable is high. Besides, independents variables can explain 59.7% of the variations in dependent variable.

Findings have agreed that program structure, employer readiness and academic performance have significant relationship with the marketability of DBA graduates. Therefore, ODL education providers have to consider those mentioned variables when designing their doctoral programs. Previous research found that the learning system is important to affect the ODL students' qualities (Musingafi, Mapuranga, Chiwanza & Zebron, 2015). Therefore, in order to enhance the competitiveness of industry-focused doctoral studies, education providers can improve the learning environments such as ICT infrastructures, online supporting learning materials and getting more corporates' feedbacks from various industries.

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EFFECTIVENESS OF INFORMATION AND COMMUNICATION TECHNOLOGY: A STUDY WITH REFERENCE TO SELECTED DEEMED UNIVERSITIES IN TAMILNADU

Dr.D.Sugumar, Assistant Professor and Head, CARE School of Business Management, CARE Group of Institutions, Trichy- gdsugu@gmail.com. 9786913987

S.Prasanna, Assistant Professor, M Kumarasamy College Of Engineering (Autonomous) , Karur prasannasrinivasan86@gmail.com

C.R.Surekha, Assistant Professor, Shivani School of Business Management, Trichy surekhasugumar13@gmail.com

ABSTRACT

There have been several studies done on impact of Information and communication technology related to libraries. Very few of them have been conducted in Universities library. Virtually speaking none of the study were focused on deemed university libraries. The present paper provides empirical evidence to ascertain Impact of Information and communication technology in the deemed university libraries of Tamilnadu state. Data was obtained from 195 respondents who are all using deemed universities library for various purpose. Results indicate that Information and Communication technology has progressively impacted on increased or decreased in the usage of libraries among the users at deemed universities as might be expected. Finally results shows that there are 6 variables were tested with 94 questions in the questionnaire including 6 personal questions. Additionally, results indicate that out of the tested variables almost all the variable were showing positive relationship with the respondents opinion towards the deemed university libraries. The following facets namely purpose of visiting libraries, available electronic resource, bibliographic information, formal source of information and informal source of information, utilization of library service and Academic motivation of the Deemed University ICT libraries has created good impact among the users.

Key word: *Deemed University, E-learning, ICT, Libraries, Users, and Tamilnadu*

INTRODUCTION

Information is all round us and is the staple diet of human beings. Information is variously perceived as facts, intelligence, data, news and knowledge. Information has been a common ingredient to all areas of human endeavor, be it the day-today affairs of business, matters of life and death or the most trivial of pursuits.

In a modern industrial society there are negligibly a few individuals, who do not, from time to time, occasionally or frequently have any requirement for information. It is an essential accompaniment of almost every social activity.

Information is considered as important that contributes towards the development of a nation. It provides the core for the development of knowledge, the basis for innovations, the resources for informed public, and as a result, becomes a key commodity for the progress of a society. Acknowledging the significance of information in national development, "Wasserman (1991) has noted that it is not an accident that the developed nations are those in which information products and services have been brought into being and are widely exploited, first in conventional forms and later through computer intervention". Members of a society acquire the needed information from a variety of sources. However, several of these sources are expensive, complex or difficult for individuals to acquire and use. Therefore, the role of libraries becomes vital in meeting the information needs of individuals in the society. Libraries develop their collections, facilities and services to meet the information needs of their patrons.

Over the past twenty seven years, academic libraries have been affected by changes in information and communication technology (Krubu and Osawaru 2011). The rate of changes is still accelerating in this area. The introduction of various Information Technology (IT) trends has led to reorganization, change in work patterns, and demand for new skills, job retraining and reclassification positions. Technological advancement of the past twenty five years, such as the electronic database, online services, CD-ROMs and introduction of internet has radically transformed access to information. Rana (2009) describes that ICT holds the key to the success of modernizing information services. Applications of ICT are numerous but mainly it is used in converting the existing paper-print records in the entire process of storage, retrieval and dissemination.

ICT has impacted on every sphere of academic library activity especially in the form of the library collection development strategies, library building and consortia. ICT presents an opportunity to provide value-added information services and access to a wide variety of digital based information resources to their clients. Furthermore, academic libraries are also using modern ICTs to automate their core functions, implement efficient and effective library cooperation and resource sharing networks, implement management information

systems, develop institutional repositories of digital local contents, digital libraries and initiate ICT based capacity building programmes for library users.

Information and Communication Technology (ICT) has brought unique changes and transformation to academic library and information services, conventional LIS such as OPAC, users services, reference services, bibliographic services, current awareness services (CAS), Document delivery, Inter-Library Loan (ILL) and Audio visual services and customer relations can be provided more efficiently and effectively using ICT, as they offer convenient time, place, cost effectiveness, faster and most-up-to-date dissemination and end user's involvement in the library and information services process. The impact of ICT characterized on information services by changes in format, contents and method of production and delivery of information products. Emergence of internet as the largest repository of information and knowledge, changed the role of library and information science professionals from intermediary to facilitator, new tools for dissemination of information and shift from physical to virtual services environment and extinction of some conventional information services and emergence of new and innovational web based.

Information and Communication Technology (ICT)

Information and Communication Technology, usually abbreviated as ICT, is often used as an extended synonym for Information Technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio - video processing and transmission of network based control and monitoring functions. The expression was first used in 1997 in a report by Dennis Stevenson UK government and promoted by the new National Curriculum documents for the UK in 2000.

The term ICT is also used to refer to the merging (convergence) of audio-visual and telephone networks with computer networks through a single cabling or link system. There are large economic incentives (huge cost savings due to elimination of the telephone network) to merge the audio-visual, building management and telephone network with the computer network system using a single unified system of cabling, signal distribution and management. This in turn has spurred the growth of organizations with the term ICT in their names to indicate their specialization in the process of merging the different network systems.

Growth of the Deemed Universities in Tamil Nadu, India

Over the past 20 years, the higher education capacity in the country has increased largely through private institutions. Currently, 43 % of institutions and 30 % of enrolments are in the private sector.

Until recently, these private institutions consisted mostly of colleges. These private colleges are subject to government control via the self financing engineering universities with which they are affiliated. They lack the autonomy to offer new programs, innovate curricula and evaluation, or change policies in matters of admissions and fees. Many people believe that the affiliating structure is a ban on Indian higher education. However, the affiliating system did ensure rapid expansion, while maintaining the sanctity of admissions and fees. Wherever academic supervision was effective, it also ensured that minimum standards were maintained.

By the mid-1990s, promoters of private colleges saw the regulatory control of the affiliating university and state governments as cumbersome, impeding the full utilization of the colleges' market potential. Thus, they wanted University status to wriggle out of the control of state governments and the affiliating Universities. This resulted in the proliferation of private Universities and private Deemed Universities.

Review of Literature

Sasireka, G and Gopalakrishnan, S (2009)⁷⁶ have examined the use of electronic resources by users in Self –financing Engineering Colleges in Tamilnadu: A select study: The survey covers various aspects like awareness of the user, user satisfaction, user pattern of e-resources and performance of print electronic version.

Gadagin, B.R et al., (2009)⁷⁷ have found out modernized form of library service that reflects a transition within the library world in the way that services are delivered to users. With Library 2.0 library services are constantly updated and revaluated to the best service by library users.

Sampath Kumar and Biradar (2010) examine the use of Information Communication Technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians' attitudes towards the use of ICT. Data-gathering tools used are inclusive of questionnaire, observation and informal interview with selected college librarians. Application of ICT in Indian college libraries has not reached a very high level. Lack of budget, lack of manpower, lack of skilled staff and lack of training are the main constraints for not automating library activities. Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. This is a comprehensive study on the use of ICT in Indian college libraries. Its findings should help college librarians, local government and also the University Grants Commission (UGC), New Delhi.

Anunobi, Chinwe and Edeka Benson (2010) examined the uses of Communication and Information Technologies (ICT) in the libraries in federal Universities in southern Nigeria. A variety of federal facilities were studied including the University of Nigeria, the Federal University of Technology Owerri, and Obafemi Awolowo University. A number of topics are addressed including identification of the serial operations performed with ICT tools, the type of ICT facilities used and data collection and performance evaluation.

It should be clearly seen from the above discussion that many studies have highlighted the importance of evaluation of library resources and services. A few studies have highlighted the information use behavior of students and faculty members of using library resources and services. Those studies are based on western experience and there is no systematic study on Tamil, when compared with the previous study.

Statement of Problem

Despite the enormous benefits that are experienced in the impact of ICT in Deemed University Libraries in Tamil Nadu, Deemed University Libraries still experience some obstacles or hindrances in the effective and efficient use of the ICT resources in the library. Today, ICT acquisition and implementation are facing a lot of problems. This research work is being conducted to expose some of the inhibiting factors that are hindering the impact of ICT on Deemed University Libraries in Tamil Nadu. Among the militating factors hindering the impact of ICT in Deemed University Libraries in Tamil Nadu, is the capital investment to buy hardware, software and standby generators for the library. Lack of search skills, lack of qualified staff, and automation at infancy level, epileptic power supply, and technical know - how are some of the problems encountered by the Deemed University Libraries (DUL).

Objectives of the study

1. To ascertain the level of computerization of Deemed University Libraries (DUL) in Tamilnadu.
2. To determine the usefulness of ICT resources in Deemed University Libraries (DUL) in Tamilnadu.
3. To determine the effectiveness of ICT in Deemed University Library (DUL) in Tamilnadu.

Hypotheses

1. H_0 : There is no significant difference between computer acquaintance of the respondents and their opinion towards utilisation of library science
2. H_0 : There is no significant association between the age of the respondents and respondents' opinion towards availability of electronic resources in libraries.

Research Methodology

There are 25 Deemed Universities are identified as sample for this study. Keeping in view the objectives of the study, an effort is made to evolve a suitable methodology of the study. The questionnaire method was considered the most appropriate one for this study because it can measure user's back ground, experience and what they know about electronic information. It was well suited to the research questions taken up for this study.

Based on the available infrastructure, resources and services available in the Deemed University Libraries (DUL), 10 questionnaires each were distributed to all 25 Deemed Universities in Tamil Nadu. Totally 290 questionnaires were distributed out of which 195 users' questionnaires were received.

Analysis and Discussion

Demographical background of the respondents

The highest number of [96] respondents are in the age group of 26 and 30 years which constitutes about 49.2% and 18.5 % of the respondents belong to the age group below 31 and 35 years. 17.4% of the respondents belong to the group of 36 yrs & above. The lowest 14.9 % of them ranges between 18 and 25 years. With regards to gender of the respondents, there are 133 respondents are men which constitute 68.2%, whereas, 62 respondents are women constituting 31.8%. Hence the gender of the respondents would fall in a mixed up combinations. As far as Educational Qualification concerns there are 128 respondents have completed post graduate courses which constitute 65.6% and remaining 67 respondents have completed under graduate courses which constitutes 34.4 %. It can be understood from the above table that the highest percentage of the respondents have completed post graduates degrees. With respect to designation of the respondents there are 45.6% of the respondents belong to students' category and 31.8% of the respondents are librarians and 19.5% of the respondents fall under Associate professors' category and only 3.1% of the respondents are research scholars. Hence the spectrum of the respondents' opinion will be helpful to derive validity conclusions. Based on frequency of using library There are 44.1% of the respondents who use the library every day and 36.9% of the respondents access the library once a week and 10.8% of the respondents are accessing library thrice a week and rest 8.2% of the respondents use the library twice a week.

Table – 1: Distribution of the respondents based on various dimensions of effectiveness of ICT enabled Deemed University Library

Sl.no	Various dimensions	No.of respondents (n=195)	Percentage (100%)
1	Purpose of library visit		
	Low	123	63.1
	High	72	36.9
	<i>Mean: 15.43 / Median: 15.00 / S.D.: 4.817 / Min.: 9 / Max.: 27</i>		
2	Available of Electronic resources		
	Low	111	56.9
	High	84	43.1
	<i>Mean: 3.94 / Median: 3.00 / S.D.: 1.927 / Min.: 1 / Max.: 7</i>		
3	Bibliographic Information		
	Low	125	64.1
	High	70	35.9
	<i>Mean: 24.85 / Median: 23.00 / S.D.: 4.945 / Min.: 16 / Max.: 36</i>		
4	Formal Sources of Library Information		
	Low	140	71.8
	High	55	28.2
	<i>Mean: 17.59 / Median: 16.00 / S.D.: 5.777 / Min.: 11 / Max.: 30</i>		
5	Informal Sources of Library Information		
	Low	145	74.4
	High	50	25.6
	<i>Mean: 18.01 / Median: 16.00 / S.D.: 5.396 / Min.: 11 / Max.: 30</i>		
6	Utilization of Library Services		
	Low	138	70.8
	High	57	29.2
	<i>Mean: 50.12 / Median: 47.00 / S.D.: 9.346 / Min.: 38 / Max.: 72</i>		
7	Academic Motivation		
	Low	125	64.1
	High	70	35.9
	<i>Mean: 22.43 / Median: 21.00 / S.D.: 7.737 / Min.: 13 / Max.: 39</i>		

Sources; Primary data

- The above table shows that 63.1% of the respondents have a low level of satisfaction towards the purpose of visits to library and 36.9% of the respondents have a high level of satisfaction. It is clear that 56.9% of the respondents have a low level of satisfaction towards the available electronic resource in the deemed university library and 43.1% of respondents have a high level of satisfaction.
- Bibliographical information shows that 64.1% of the respondents were in a low level and the remaining 35.95% of the respondents were at a high level of satisfaction towards bibliographical information in deemed universities' libraries.
- With respect to format sources of library information, 71.8% of the respondents are at a low level of satisfaction and only 28.2% of the respondents are at a high level of satisfaction towards the statement and its mean value is 17.59, median is 16.
- Sources of library information represent that 74.4% of the respondents are in a low level and the remaining 25.6% of the respondents are at a high level of satisfaction.
- In relation to the utilisation of library service, 70.8% are in a low level of satisfaction and 29.2% are in a high level of satisfaction towards the library utilisation
- With respect to academic motivation, there are 64.1% of the respondents who are in a low level of satisfaction and 35.9% of them are in a high level of satisfaction towards the academic motivation.

Hypothesis Test -1

Research hypothesis

H₁: There is a significant association between the age of the respondents and respondents' opinion towards availability of electronic resources in libraries.

Null hypothesis

H₀: There is no significant association between the age of the respondents and respondents' opinion towards availability of electronic resources in libraries

Table 2: Chi square Test between the age of the respondents and various dimensions of effectiveness of ICT enabled Deemed University Library.

Sl.no	Various dimensions	Age				Statistical inference
		18 to 25yrs (n=29)	26 to 30yrs (n=96)	31 to 35yrs (n=36)	36yrs & above (n=34)	
1	Purpose of library visit					X ² =22.462 Df=3 .000<0.05 Significant
	Low	17(58.6%)	74(77.1%)	21(58.3%)	11(34.4%)	
	High	12(41.4%)	22(22.9%)	15(41.7%)	23(67.6%)	
2	Available of Electronic resources					X ² =6.413 Df=3 .093<0.05 Significant
	Low	17(58.6%)	62(64.6%)	15(41.7%)	17(50%)	
	High	12(41.4%)	34(35.4%)	21(58.3%)	17(50%)	
3	Bibliographic Information					X ² =13.374 Df=3 .004<0.05 Significant
	Low	16(55.2%)	73(76%)	21(58.3%)	15(44.1%)	
	High	13(44.8%)	23(24%)	15(41.7%)	19(55.9%)	
4	Formal Sources of Library Information					X ² =32.822 Df=3 .000<0.05 Significant
	Low	16(55.2%)	80(83.3%)	31(86.1%)	13(38.2%)	
	High	13(44.8%)	16(16.7%)	5(13.9%)	21(61.8%)	
5	Informal Sources of Library Information					X ² =32.974 Df=3 .000<0.05 Significant
	Low	15(51.7%)	86(89.6%)	28(77.8%)	16(47.1%)	
	High	14(48.3%)	10(10.4%)	8(22.2%)	18(52.9%)	
6	Utilization of Library Services					X ² =48.452 Df=3 .000<0.05 Significant
	Low	13(44.8%)	87(90.6%)	26(72.2%)	12(35.3%)	
	High	16(55.2%)	9(9.4%)	10(27.8%)	22(64.7%)	
7	Academic Motivation					X ² =20.050 Df=3 .000<0.05 Significant
	Low	11(37.9%)	66(68.8%)	31(86.1%)	17(50%)	
	High	18(62.1%)	30(31.3%)	5(13.9%)	17(50%)	

Inference

The calculated value $X^2 = 6.413$ and the ($P < 0.05$), i.e., $.093 < 0.05$ Hence the calculated value is less than the table value. Therefore, the research hypothesis is accepted and the null hypothesis is rejected. The association between the age of the respondents and their opinion towards the availability of electronic resource in deemed university libraries shows that there is a significant association. Therefore it is clear that opinions of the respondents are varying according to their age classification.

Research hypothesis Test - 2

H₁: There is a significant difference between computer acquaintance of the respondents and their opinion towards utilisation of library science

Null hypothesis

H₀: There is no significant difference between computer acquaintance of the respondents and their opinion towards utilisation of library science

Table 3 : “T” test on the difference between the respondents’ computer acquaintance and various dimensions of ICT at deemed university libraries

Sl.no	Computer acquaintance	Mean	S.D	Statistical inference
1	Purpose of library visit			
	Yes (n=110)	16.21	5.250	T=2.622 .009<0.05 Significant
	No (n=85)	14.41	3.998	
2	Availability of Electronic resources			
	Yes (n=110)	4.57	1.894	T=5.574 .000<0.05 Significant
	No (n=85)	3.13	1.653	
3	Bibliographic Information			
	Yes (n=110)	26.15	5.111	T=4.364 .000<0.05 Significant
	No (n=85)	23.16	4.183	
4	Formal Sources of Library Information			
	Yes (n=110)	19.33	6.322	T=5.073 .000<0.05 Significant
	No (n=85)	15.34	4.019	
5	Informal Sources of Library Information			
	Yes (n=110)	19.43	5.919	T=4.378 .000<0.05 Significant
	No (n=85)	16.16	3.964	
6	Utilization of Library Services			
	Yes (n=110)	52.78	9.976	T=4.765 .000<0.05 Significant
	No (n=85)	46.68	7.168	
7	Academic Motivation			
	Yes (n=110)	25.41	7.700	T=6.804 .000<0.05 Significant
	No (n=85)	18.56	5.879	

Df=193

Inference

The calculated value T=4.765 and (P<0.05). The calculated value is less than the table value. So the research hypothesis is accepted and the null hypothesis is rejected. The above t test has confirmed that there is a significant relationship between the computer acquaintance of the respondents and their opinion towards the utilisation of library science. Therefore the respondents who have more knowledge on computer would understand the utility level of library information.

CONCLUSION

Library and information centers are playing a crucial role in the growth and development of the nation directly/indirectly by providing better services to the members of the society. This study examines the effect of impact of information and communication technology (ICT) in deemed university libraries of Tamil nadu. Results indicate that most of the deemed university library well equipped with ICT enabled libraries, of which most of the libraries were highly satisfied towards the function of ICT enabled deemed universities libraries with the tested variables. There are 6 variables were tested with 94 questions in the questionnaire including 6 personal questions. Additionally, results indicate that out of the tested variables almost all the variable were showing positive relationship with the respondents opinion towards the deemed university libraries. The following facets namely purpose of visiting libraries, available electronic resource, bibliographic information, formal source of information and informal source of information, utilization of library service and Academic motivation of the Deemed University ICT libraries has created good impact among the users. Finally results shows that out the tested hypotheses, 4 hypotheses were accepted namely, age, designations, frequency of visiting library and time spending whereas other 4 hypotheses were rejected namely gender, educational qualification, computer acquaintance and utilization of library information toward the ICT enabled deemed university library . In generally it can be said that the results of this study indicate the extant of the high levels of Impact that exist among deemed university libraries due to arrival of information and communication technology.

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IMPACT OF DIGITAL TECHNOLOGY ON LEARNING TO ENHANCE THE EMPLOYABILITY SKILLS OF BUSINESS MANAGEMENT GRADUATES

Dr. R.Mary Metilda*, Neena .P.C **,

*Professor & Head, Department of Management Studies, Sri Ramakrishna Engineering College, Coimbatore, India

**Research Scholar, Management Science, Anna University, Chennai, India
Assistant Professor, Sambhram Academy of Management Studies
Bangalore, India

ABSTRACT

The entry of online technology in the information era has witnessed a radical effect on the knowledge acquisition of an individual to sustain in the competitive scenario. The professional of the digital age is expected to acquire ICT (Information and Communication Technology) skills to survive in the virtual world to be successful in their career. The advent of digital tools and networking facility had set up an electronic platform for a graduate to improve their employability skills. The introduction of Digital Technology boosted the process and core skills of an individual with high self-confidence, a process skill attribute of the employability skills to achieve success in the job market. This paper is an analysis of the significance of Learning with Digital Technology to enhance the employability potential of business graduates as digital competence is expected for better employment prospects. The study had analysed the variation of the process skills of the graduates with the impact of the digital technology facilities implemented in institutions and had also identified the instance of high variation in the process skills of those graduates are not given exposure to Digital Technology facilities.

Keywords: Process Skill, Employability, ICT, e-Learning, Digital Technology, Business Management Graduates, Experiential E-Learning Applications for MBA course

INTRODUCTION

The transition from traditional modes of learning to the modern means of virtual learning had taken place in India at a higher pace, though the educational institutions follow the technological advancements in a snail's pace. The e-learning revolution with the e-commerce entry and its impact on the employability of business management graduates is an interesting study in the recent competitive business world. There is an utter need for the business management graduates to upgrade their skills due to the mismatch of skills with the changing business set-up in the present context. The contemporary business management set up is with global standards of benchmarking at all functional levels and expect the young graduates to be equipped with the technological skills to match the competitive business world. This study is intended to find the impact of learning with Digital Technology on the employability skills of business management graduates.

The business graduates should possess digital skills with exposure to ICT (Information Communication Technology) and Digital Technology as these are vital skills considered by the employer to absorb management graduates for a job. Not all the institutions provide the infrastructure facilities with the digital infrastructure, but certain advanced institutions with an additional investment had initiated it. This will surely enhance the employability potential of the students, as they get exposure to activities such as interactive webinars, conferencing both audio and videos, access to expert sessions through the internet, CEO talk, web blogs which discuss a specific topic with inputs from various segments of industry in different streams and access to research-based articles in referred journals through e-learning digital library.

Scope of the study

The advent of the digital communication technology in the academic field had marked a significant impact on the higher education. The new generation is more inclined to get information from the web-based learning and the access to the internet had radically changed the learning methodology of the graduates (Wentworth & Middletown, 2014). The advantage of e-learning will benefit the graduates if the proper alignment of the technology is done with pedagogy combined with teacher's efficiency in imparting it (Petko et.al, 2012). The young generation is totally engaged with technology, which motivates them (Higgins et.al, 2012) to acquire expertise in their interested topics of study. There are several ways the Digital Technology has been improving the efficiency of the education system, there is promising evidence that an individual's employability skills are also enhanced with the know-how of ICT. It is a fact that continuous upgrading of skills for employability is mandated for any job as per the dynamic conditions of the industry. Digital resources coupled with digital tools

can increase knowledge and the career environment of a graduate and enable him to understand the career trends with the connection to the external world through the World Wide Web.

REVIEW OF LITERATURE

Horton (2001) defined e-learning as the application of internet and digital technologies to create experiences that educate human resource. E-learning includes all forms of electronically supported learning and teaching and ICT are used for its functioning which supports in transferring of skills and knowledge (Ionescu, A.2012). E-learning has the potential to revolutionise the way we instruct to learn and how we learn (Marc, Rosenberg, 2001). Learning with Digital Technology entails a blend of technology, digital content and training. Digital Technology is defined as any process in which the teacher or learner uses digital equipment such as a computer (or a Laptop, tablet, MP3 player, or console) to access digital tools such as learning platforms and virtual learning environments (VLEs), and/or Learning with Digital Technology resources (such as lessons, tests, learning aids and games) to improve their knowledge and skills. The learning hub in e-learning consists of digital class; Wi-Fi enabled campus, e-books access, free or paid through the online library, usage of ICT in the learning process. The digital tools if used efficiently, it will build skills such as interactivity, critical thinking, collaboration among the students and initiate e-commerce link to the learning process. (Lou et al, 2001).

BENEFITS OF LEARNING WITH DIGITAL TECHNOLOGY

The Learning with Digital Technology comprises of ICT products such as teleconferencing, email, audio, television lessons, radio broadcasts, interactive voice response system etc. (Sanyal, 2001, Sharma 2003). EDUSAT is the first exclusive satellite configured to meet the growing demand for an interactive satellite-based distance education system for India. Many other live transmission programs have been set up with the support of Government initiatives for the benefit of the learners. The UGC (University Grants Commission of India) had set up Media Centres in various universities and institutions in the country to produce video & multimedia-based programmes and in-house quality educational programmes for electronic media. The queries of the students can be addressed in a live manner with methods such as Audio Video Conferencing through the satellite based distance education system which enables virtual class access at rural and remote locations across the country. The launch of Cloud-based E-learning solutions have enabled to use the web based tools at a reasonable cost and the Open educational resources (OER ICT) supports graduates to access the subject based contents in the virtual learning world. There are lots of groups who contribute widely to open source and open content which plays a critical role in e-learning in the future. Hence, there should be an appropriate benchmark to monitor the e-learning courses and the industry should be ready to accept the e-learning certification to smoothen the placement process of the learners.

Similarly, there is some qualitative evidence that digital tools and resources enable teachers to do their job better in relation to teaching, assessment and their own on-the-job learning and development. There are various factors to be identified that to be added for efficient implementation of Digital Technology learning and teaching. The instructor's support to graduates to access digital facilities is vital or else the very purpose of Learning with Digital Technology fails to achieve it. The exposure of students to digital class learning has already proven successful in the school education with the multi-media facility which enables visual based learning of different subjects (Chong, D. H., 2001). Successful utilisation of Digital Technology depends not just upon sufficient access to equipment, tools and resources, but also on the availability of sufficient training, and knowledge and support networks for teachers (Ali, M. 2015). Instructors should be competent to work in virtual learning environments to facilitate communication with students as well as the other stakeholders of education (Zhao, 2001). The use of Digital Technology can aid teachers to improve their pedagogical approaches and their assessment of learning of the graduates (Littlejohn et al., 2002) with more accuracy in the evaluation and feedback system which gives scope for further improvement in their academic performance.

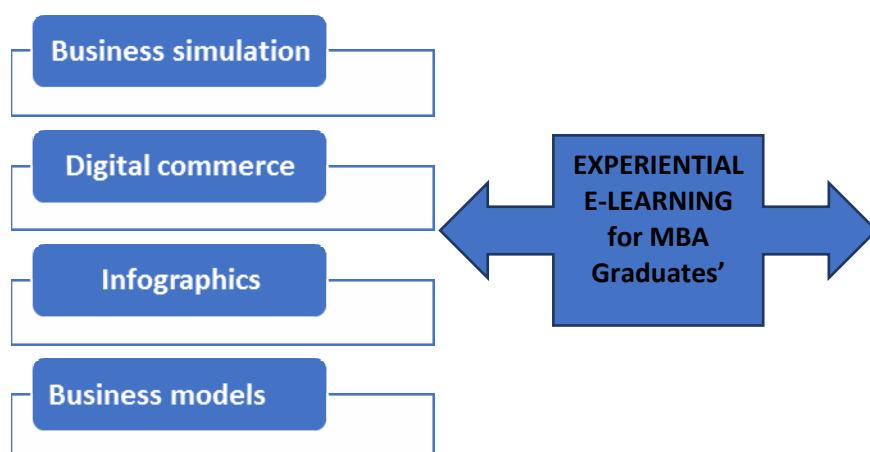
There are many graduates who had enrolled for a certification course (Nathan et al., 2016) to improve their employability potential as they are aware of the tough job market in the current scenario to land into an employment. The empirical studies (Aristovnik, A., 2012) had identified the efficiency of educational outcomes that varies across the countries with the kind of infrastructure facilities involved, which has great potential to increase the efficiency in ICT for improving the educational outcomes. Most of the Y-Gen students of all streams are technology savvy, who depends more on the internet technologies for updating knowledge. Students are having access to a gamut of information which can be accessed through Google, Wikipedia, etc. to clarify their doubts instantly compared to the olden times to be clarified it from the instructors. The authors' (Bhattacharya and Sharma, 2007; Cholin, 2005) had done a descriptive study on the projects to facilitate e-learning facilities in various institutions and examined the reasons for the limited e-learning situation in developing nations like India and highlights on the alternatives that are available with the institutes to deploy ICT and to implement e-learning.

ADVANTAGES OF E- LEARNING FOR BUSINESS MANAGEMENT PROGRAMS

Most of the academic institutions adopted Learning with Digital Technology for improving the employability of the graduates with exposure to case studies of reputed industry bodies and institutes, with incorporating business cases of different segments and sectors improves the knowledge of the graduates. The competitive industry employers expect digital competence along with other personal competencies which are related to social skills of networking to connect to the outer world through networking. The effective use of digital technologies combined with ICT practice is crucial for an institution to link with industry to update the progress in the business where the experiential learning is crucial. (Steven Gold, 2001) had analysed the important aspect of experiential e-learning applications in finance which he recommends the institutes to implement through internet applications and emphasized on the potential for experiential learning with the embrace of digital technology through a range of internet applications which are student’s trainings especially in the business studies such as Sector Tracker, Asset Allocator, Mutual Funds Map, Fund Analyzer, online HR recruitment, interactive sessions with industry experts in webinars, and such. The experts from each industry sector address graduates through webinar and video conferencing which will enable the graduates to get the explanations instantly. The students feedback about the online learning states that courses delivered online in part-time MBA program is constructive and it enables to develop the knowledge creation skills with the availability of course material through the internet. (McGorry, S. Y, 2002).The students get access to research-based through e-library with e-database of journals such as EBSCO, repositories of universities, Ernet hosted journals, ProQuest etc. mentioned in the websites of various management

METAMORPHOSIS INTO EMPLOYMENT WITH DIGITAL COMPETENCE

Youssef et.al (2008) studied about the influence of the usage of ICT on the student’s outcome in the higher education and focused on the direct and indirect effects. Many of the institutions opt for the usage of ICT as it has a positive correlation with the student outcome which demonstrates in improving their motivation, self-esteem, ICT skills, collaborative skills, subject knowledge, information handling skills, metacognitive skills etc.The institutions with Digital Technology facilities assist students with access to lecture contents,article and case studies of reputed journals,thesis from the database of central repositories Portals.Among these, business management studies through online are highly accepted with the launch of MOOC (massive open online course) from Harvard to a Private partnered course which was widely accepted globally. Thus, the students can benefit from experts spread across the globe.The academic factors of employability from the institutional perspective includes the infrastructure facilities an institution offers which are mainly digital library, a computer lab with management relevant software, conference sessions with digital satellite technology, webinars and video conferencing from companies etc.The access to University repositories with the database collection of research journals will strengthen the knowledge of any individual, are the sources of enhancing graduate’s employability skills.



Each institution and the faculty make use of the digital resources in different manners and it enhances the knowledge to help graduates to be aware of the latest developments (Plomp, Pelgrum & Law, 2007). There are various ways in which a graduate who depends on online learning gather information to improve skills. Raboca et.al (2004), had analysed the student’s perceptions on the impact of ICT in the educational attainment with various merits & de-merits observed to it. The benefits are the performance improvement with the ICT tools and the drawbacks are the lack of training both in the teachers and students in the use of ICT tools(Almenara,2004). The digital skills should help the student to analyse the business set-up from different angles of digital marketing, stock trading, Forex trading, and online investments, Outsourcing of HR functions

such as online recruitment, Marketing tools as CRM – customer relationship management, online market surveys etc. This kind of experiential learning has a strong impact on improving the employability of business management graduates who studies in institutions supplemented with online based training. The participation of students voluntarily in blogs of their specialization can open a way for the interchange of ideas to learn more about their subject which is also an interesting window for discussion on the world-wide web. The collaboration with international universities through online also helps to exchange ideas beyond the cross-cultural zone. The entire process of the educational e-learning system requires a shift of change management incorporating Student Information System, Collaborate Social Networking Sites, executive business Programs through internet etc.

Though studies are conducted to know the impact of curriculum and other factors on the outcome of the student learning, the impact of digital technologies on the improvement of the employability skills for business graduates is yet to explore. The study is relevant as there is a widening of skill gap due to ineffective strategies of the implementation of technology in the academic field.

PROCESS SKILLS AND EMPLOYABILITY

PROCESS SKILLS	
Digital Technology / Computer Literacy	Problem solving
Commercial Awareness	Negotiating
Prioritising	Decision Making
Subject Application / Domain Knowledge	Team Work
Time Management	Accountability

Table 1. Process Skills

The process skill (Saunders V & Zuzel K, 2010) is implied with the application of tools to complete or organise a task into a logical sequence for successful completing any task with the right application of skills in the right context. The survey conducted for the management students convey that their learning process is efficient with Wi-Fi enabled campus which facilitated them to refer instantly to the internet for clarification of some terminologies and comprehensions.

Objectives of this study

- To analyse the impact of Learning with Digital Technology on the employability skills of business management graduates.
- To examine the variation in the skill level of process skills of graduates with the implementation of digital technology in the institutions.

Population and Sample size

The impact of Learning with Digital Technology in the skill sets is analysed in three different contexts of graduates of Tamilnadu, Karnataka and PGDM institutes of both states. (Table 1)
Hence, the population of the study taken are as given in the table below.

State / Course	No. of Institutions	No. of students	Sample proportion estimated	Response collected
TAMILNADU MBA	367	29900	384	456
KARNATAKA MBA	186	18930	384	442
PGDMTamilnadu & Karnataka Total	47	6955	384	386

Table1. Sample of the study

The sample data of the study are business management graduates of different institutions. Their skill level is evaluated using a self-assessment instrument and compared with the expected skill level from the employers of selected sectors of industry. The facility of digital technology in the academic institutions is taken as the selection variable with its impact on the dependent variable of process skill average and the process skills of students which are the independent variable. The predicted value derived with the analysis of multiple linear regressions is compared with the mean value and based on that the variation of the skills set is derived.

The process skill variation in the employability is modelled using the regression equation
Process skill Predicted value = $\beta_0 + \sum \beta_1 * \ln(\text{mean of process skill})$
where the mean is given in the descriptive statistics.

REGRESSION CO-EFFICIENT AND PREDICTED VALUE OF PROCESS SKILL OF GRADUATES OF INSTITUTIONS IN TAMILNADU WITH AND WITHOUT DIGITAL TECHNOLOGY

PROCESS SKILL VARIATION OF GRADUATES - TAMILNADU						
Learning with Digital Technology	Predicted process skill level			R ² of model	F value	Significance
	Mean	σ	Predicted level			
YES	6.04	1.29	4.88	.258	3.44	.000
NO	5.82	1.35	5.09	.260	11.92	.000

Table 2. Predicted value of the skill variation

The above table indicates there is less (predicted variation in process skill is 4.88) variation in the process skills among students towards the end of the course as they have been trained with Digital Technology facility in the institution. The predicted variation in process skills of 5.09 is higher in institutions without ICT facilities than that of with ICT facilities, this indicates that the employability skill of graduates from institutions with ICT facilities have a high average (6.04) and low F Value (3.44). But mean of process skill of graduates from institutions without ICT facility is 5.82 and F value is 11.92. This shows lower digital skills and large variation in employability level due to the variation in digital skills.

These are the outcomes of the linear regression analysis of the student's process skills with the selection variable as e-Learning availability or not. The 't' value is less than '2' and significant level >.05, except in ICT, prioritizing, Subject Application, Time Management, and Problem Solving. This means that only these above four skills contributed to the variation in process skill, while no variation to all other skills to an extent.

REGRESSION CO-EFFICIENT AND PREDICTED VALUE OF PROCESS SKILL OF GRADUATES OF INSTITUTIONS IN KARNATAKA WITH AND WITHOUT DIGITAL TECHNOLOGY

PROCESS SKILL VARIATION OF GRADUATES - KARNATAKA						
Learning with Digital Technology	Predicted process skill level			R ² of model	F value	Significance
	Mean	σ	Predicted level			
YES	5.54	1.47	4.27	.459	13.05	.000
NO	5.76	1.44	4.49	.265	9.82	.000

Table 3. Predicted value of the skill variation

The above table shows the variation in the predicted value of the process skill among the graduates from the institutes with Digital Technology facility as 4.27, which is less than the predicted value of (4.49) without Digital facility. The regression model for the process skill for with Digital Technology facility explained 45.9% variance and only 26.5% for the process skills of students from institutes without Digital Technology facility. This is a contrast to the results of Tamilnadu institutions as the students in Karnataka institutions, especially students from urban areas are acquainted with Digital technologies by their own initiatives without depending on academic institutions. Hence, even if there are no Digital Technology facilities in their institutions, their employability level is high.

REGRESSION CO-EFFICIENT AND PREDICTED VALUE OF PROCESS SKILL OF GRADUATES OF INSTITUTIONS IN PGDM (TAMILNADU & KARNATAKA) WITH AND WITHOUT DIGITAL TECHNOLOGY

PROCESS SKILL VARIATION OF GRADUATES - PGDM						
Learning with Digital Technology	Predicted process skill level			R ² of model	F value	Significance
	Mean	σ	Predicted level			
YES	6.48	1.26	3.65	.328	4.83	.000
NO	5.95	1.26	4.60	.516	10.44	.000

Table 4. Predicted value of the skill variation

The above table shows the predicted variation in the process skill as 4.60 for institutions without digital technology facility and it is higher than the predicted variation in process skills (3.65) with digital technology facility. The process skills such as Subject application, Problem-solving, Negotiating and Accountability have 't' value greater than '2' in the case of students of PGDM institutes with digital technology facility and skills such as Decision making, Team work and Accountability have 't' value greater than '2' in the case of students of PGDM institutes without digital technology facility. The variation in employability level ($F= 10.44$) in institutions without Digital facilities is higher. It resembles the results of institutions from Tamilnadu.

RESULTS AND DISCUSSIONS

The study had identified the impact of digital technology on the employability of graduates in business institutions; and found out that digital technology support contributes to specific skill level attainments with improvement in the learning capacity of the graduates and improved the efficiency of the academic system. The study also identifies the variation of different process skills of graduates with respect to the availability of the ICT/digital technology facilities surrounding them. There is a significant effect of the variation in the level of process skills of the students from the institutes without digital technology facilities. This has a substantial difference in the achievement of professional skills which will increase the employability of the students. The lower variation in the Predicted value score of certain skills of students in the institutes of the Learning with Digital Technology indicates that the student's process skills are improved with this background. Hence, the study concludes that there is variation in process skills of graduates of institutes where there is exposure to these updated learning environments with ICT and Learning with Digital Technology. The study also indicates there is an improvement in the employment with the transition in the instruction methodology and pedagogy if it is incorporated in the business management institutes in the form of digital competence to be attained along with other competencies.

LIMITATIONS AND CHALLENGES

There is a contradictory outcome in some societies despite the considerable growth in the use of information and communication technologies (ICT) as there is a signal that HE(Higher Education) fails to attain the expected transition in learning and teaching. The implementation of the Learning with digital technology is a costly affair with the initial huge investment to initiate the process and the know-how and expertise to execute and train the graduates. The Learning with digital technology requires the up gradation and maintenance of digital tools and it involves operational costs for an effective outcome. Another imitation in the online world is that broad band connection often getting slower and the challenge lies in the continuous availability of network connection. As many reports state that a reasonable proportion of students who enrolled in the various online courses had discontinued it which proves that absence of human factor in the virtual learning is a major drawback for its final success. There are lots of indication that the overall technology-based interferences in a student's learning will make a difference only when it is utilized properly to support teaching and learning.

CONCLUSIONS

In general, it can be summarized that digitalized e-Learning have its impact on the development of the process skills which reflects on the employability of the graduates. Hence, the Government should focus to initiate strategic policies for Learning with Digital Technology and teaching by highlighting its benefits in the academic institutions. As the corporate world demands graduates sharpened with ICT skills on hiring the entry level graduates, the challenge ahead is to overcome the road blocks of the institutions to emerge a blended learning system in the virtual platform comprising both traditional and e-Learning.

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LOCATION AWARE ADAPTIVE ELEARNING MODEL

V.Vidhya

Professor, Department of Computer Science and Engineering
Sri Venkateswara College of Engineering, Sriperumbudur, India.

ABSTRACT

Extended Actuality (EA) development can be considered as on a very basic level involving two points of view: ID of certifiable dissent and show of PC delivered propelled substance related the recognized genuine question. The particular trial of adaptable AR is to recognize this present reality address that PDA's camera goes for. In this paper, we will show a Location Aware question unmistakable verification figuring that has been used to recognize learning objects self modify Location Aware convenient learning setting. We will moreover give some establishment of the computation, look at issues in using the figuring, and present the count empowered flexible learning structure and its utilization.

Keywords: Extended Actuality, Object Identification, Location Aware adaptive eLearning

INTRODUCTION

Cell phones have turned out to be pervasive in today's learning. Presently with the development of new usefulness in cell phones, eLearning can be led in more inventive mold. From the instructive point of view, the upsides of eLearning couldn't be completely abused and shown if the eLearning is just led by utilizing the versatile program to get to learning substance without utilizing the local capacities and components of the cell phones. There are increasingly Location Aware portable applications from Location Aware data administrations to Location Aware amusements and after that Location Aware omnipresent learning. As of late, cell phones with inherent Global Positioning System (GPS) recipients and A-GPS administrations are turning out to be progressively mains tream. Using a cell phone's Location Awareness capacity inside eLearning applications has now turned into a reality. One of the rising exploration accentuations is to use the Location-Awareness usefulness of the cell phones to additionally fortify eLearning. Past research have likewise demonstrated that the blend of Location Awareness and a logical learning methodology can empower learners to better build significant contextualization of ideas.

Moreover, Location Aware e-learning gives a customized learning knowledge and aides in keeping the learners occupied with the learning exercises and upgrading their viability. For instance, as far as omnipresent learning applications, proposed a customized setting Aware universal learning framework with capacity to misuse fitting setting in view of learners' Location, relaxation learning time, and individual capacities to adjust learning substance towards learners for advancing the learning premiums and execution. Situational learning approach for dialect learning showed that setting is a critical considers the learning procedure and it can improve learners' learning premium and learning viability. These cases recommend that significant information is developed principally when the learning procedure incorporates with social culture and life-setting.

Expanded Reality (ER) has turned into a well known show and intelligent strategy in the previous couple of years. It can be characterized, as a system is to show virtual substance superimposed upon genuine items. Then again, the Location Aware Self-alter eLearning is to give Self-change learning substance to specific learner as per the learner's Location where the genuine - life setting is utilized as learning items. To utilize cell phones to communicate with genuine learning object in a setting Awareness eLearning condition, Mobile Enlarged Reality (MAR) is presented. The original of MAR utilizing setting Awareness depended on portable workstations and for the most part utilized Location data as a unique circumstance. At that point the vast majority of the inquires about were centered around utilizing a space information and conduct model to enhance associations in MAR.

Omnipresent learning offered through the Mobile Enlarged Reality Systems (MARS) requires all around built framework/programming engineering keeping in mind the end goal to convey on-request instructional administrations. Target applications created from the design require instructional capacities for comprehension singular learning qualities while fitting experimentally assessed academic systems to upgrade learning execution. With a specific end goal to essentially affect taking in, a MARS e-learning apparatus needs to reliably quantify learning progress and persistently redesign data about the learner for the term of the learning connection. Subsequently, a MARS e-learning device may consistently handle learning information related to a given setting for a given learner.

In this exploration, Enlarged Reality is considered as a rising substance show method that can enhance and upgrade learning content introduction and additionally communication amongst learners and learning substance

related with Location Aware genuine learning objects (RLO). To apply AR method for the taking in, the significant specialized test is to recognize genuine items (the substances). With a specific end goal to handle the specialized issue, this paper introduces a Location Aware Object Identification Algorithm that we proposed and have executed in an eLearning application. The calculation means to recognize the genuine learning objects by coordinating the labeled Location data of the RLOs with the present Location and introduction of the cell phone. Besides, the calculation additionally gives the direction capacity to explore learner to the privilege RLO among the adjacent RLOs for learning. A genuine learning article is a genuine protest utilized as a Location Aware learning object in the Location Aware eLearning setting.

A Location Aware Self-change eLearning application, called Multi-Object Identification Enlarged Reality (MOIAR) has been created to apply AR strategy into eLearning application. It is engaged by the Location Aware Object Identification Algorithm to recognize the genuine learning objects in the eLearning setting. The execution of the eLearning application has demonstrated the ease of use and the common sense of the Location Aware Object Identification Algorithm, to enhance the learning content versatility, the MOIAR likewise uses the 5R Self-alter system, which gives Self-modify learning substance as well as helps genuine learning object recognizable proof. The 5R adjustment idea for Location Aware eLearning is expressed as: at the perfect time, in the correct Location, through the correct gadget, giving the correct substance to the correct learner.

In this paper, we will survey the related work taking after by this segment. At that point in segment 3 we will display the Location - based Object Identification Algorithm in detail. In segment 4, we will give a Location Aware eLearning situation contemplate where the MOIAR application is utilized at the Legislative Assembly of Alberta as a genuine learning item to show convenience and viability of the calculation. At last this paper will be finished up with discourse of future works.

Related Work

In Enlarged Reality, markers are regularly utilized as a part of nature because of their low setting up cost and vigor. In any case, it is an obtrusive arrangement since items must be labeled with these codes. Then again, developing following frameworks offer different approaches to distinguish protests in this present reality. They go from the notable Global Positioning System (GPS) to GSM, GPRS and UMTS frameworks, which empower distinguishing proof and Location of cell phones inside a range of impact. Radio recurrence ID frameworks (RFID) empower non-contact perusing of transponders furnished with an overall remarkable ID number. The rising remote sensors arrange (WSN) frameworks empower the following of cell phones that are associated with the system through a remote system card.

There are many situating approaches (GPS, WLAN, GSM, transponders, indoor situating frameworks, and so forth.) and introduction recognizable proof techniques (computerized compass, accelerometer, gyros, and so on.). They give a wide range of following data and bolster diverse Location recognizable proof frameworks. For example, a dynamic detecting framework can decide its present position or potentially introduction without anyone else. Worked in A-GPS recipient and advanced compass on a cell phone empower the cell phone to have the capacity to identify its present position and heading.

Extended Actuality (SA) can join advanced media/data and increase the physical world. This capacity to intertwine advanced media inside the physical world offers path to the potential for SA realizing which makes the perfect conditions for locative, logical and circumstance based learning situations. Earlier research has reasoned that the consolidation of different sensors gives new routes in which we can collaborate with our general surroundings. Moreover, the instruments (programming) and advances (equipment) are all the more equitably circulated and are available to us to send blended reality learning situations that convey rich and immersive AR content which could possibly re-shape how people and gatherings approach learning and training.

Lion's share of the earlier research about applying SA into instruction has shown that the natural association of AR has enormously enhanced learning productivity, inspiration, and general execution. Proposed novel amusement based English learning framework with setting Aware intuitive learning component which can suitably give a relating diversion based English learning scene to the learner's handheld gadget in light of the learner's Location setting. The proposed framework means to build a blended reality amusement learning condition that coordinates virtual items with genuine scenes in a college library. The preparatory exploratory outcomes uncover that the proposed learning mode gives likely advantages as far as advancing learners' learning advantages, expanding learners' eager to learning English. An examination built a learning framework called HELLO (Handheld English Language Learning Organization). It comprised with 2D scanner tag and handheld AR that has 3D vivified virtual learning accomplice (VLP) over this present reality. The understudy can finish the setting Aware learning process by conversing with the VLP and to learn in the outlined diversion based

educational situation to enhance understudies' English level. Another exploration displayed a SA framework for offspring of the Summer School of the Technical University of Valencia for finding out about the inside of the human body. Likewise, they exhibited two SA intelligent narrating frameworks that utilization substantial solid shapes for indistinguishable understudies from specified above to learn with the 8 distinct finishes of the Lion King story. Proposed a bit of instructive programming that utilizations community SA on completely self-governing PDAs running the application which is laid out as a two player SA PC diversion, together with an optical marker-based following module to show learners the importance of kanji images. Built up a collective SA application, called Construct3D, particularly intended for science and geometry training. Construct3D depends on the versatile cooperative ER framework "Studierstube" inside the more noteworthy setting of immersive virtual learning situations.

LOCATION AWARE ENTITY DETECTION ALGORITHM

The MOIAR Overview

SA gives a magnificent learning interface in an eLearning application. The learner's view is broadened with computerized data at the right geographic Location, in this way giving a natural method for introducing such data. In this paper, the MOIAR application concentrates on distinguishing Location Aware open air genuine learning objects. The MOIAR intends to give the learning substance as well as permit learners to collaborate with the Real-life Learning Objects (RLO) in the least difficult and most natural way. The MOIAR can likewise give learning substance that are adjusted and customized to learners through SA show. In the MOIAR, a versatile SA customer application running on a cell phone that is outfitted with an inherent A-GPS and a computerized compass is utilized as the GPS beacon and the learning terminal. The cell phone can consistently track a learner's development without the requirement for outer references. Once in a while it might be helped with optional sensors, for example, movement sensors (accelerometers) and revolution sensors (gyrators). Assist, with the usage of SA and cell phone's Location Aware ness and portability, the MOIAR can possibly wipe out a portion of the learning impediments and drawbacks that exist in the conventional learning. Figure 1 demonstrates the MOIAR application framework engineering chart.

Location Aware Entity Detection Algorithm

In the MOIAR application, SA is utilized to show computerized learning substance identified with the genuine - life learning objects by superimposing upon the video stream of genuine - life question on the cell phone's screen. This implies the learner conveying the cell phone must be at a Location that is adjacent the genuine protest, and the learner needs to confront the cell phone's camera focal point towards the genuine question, so that the substance can be seen superimposed upon the genuine learning object on the screen. To show the correct learning substance on the genuine question, the MOIAR must have the capacity to recognize the genuine protest i.e. to discover which the Location Aware learning object put away in the database of the eLearning application coordinate with the genuine question; then the Self-change instrument will produce right learning substance superimposing on the protest.

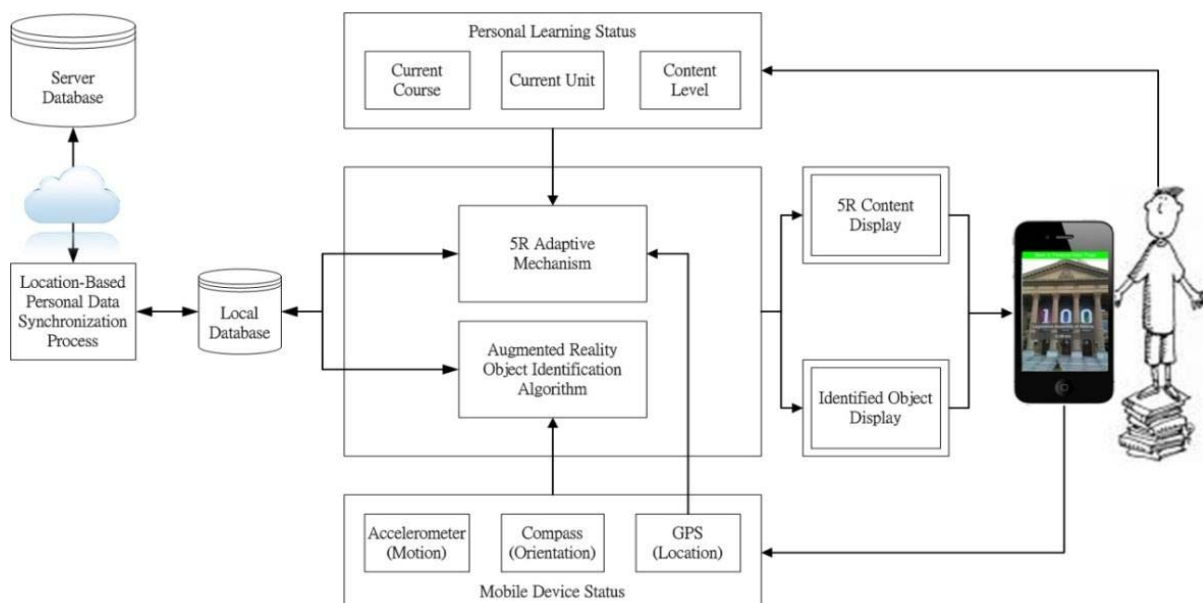


Figure 1: The MOIAR system architecture diagram

The idea behind the Location- based object identification algorithm for mobile Enlarged Reality is based on Location-Awareness of mobile devices and known geographic coordinates of Location Aware learning objects in the Location Aware eLearning environment. The MOIAR mobile application first obtains the current geographic coordinates of the mobile device acquired by the built-in A-GPS sensor. The MOIAR then uses the geographic orientation information to obtain the absolute orientation, which is detected by the built-in digital compass. On the other hand, each Location Aware learning object predefined and stored in the database has been tagged with its geographic coordinates. When the learner with the mobile device was approaching into a pre-configured distance toward a real -life learning object, the MOIAR application will find the object then calculates the relative distance and orientation between the mobile device and the real-life object, which is accomplished by the Location Aware object identification algorithm.

In fact, in the outdoor learning environment, the Locations of real-life objects used as Location Aware learning objects are known and fixed. When the learner carrying a mobile device is standing nearby a real-life object, it is easy and would make sense for the learner to change his/her current orientation to face the camera lens to the real-life object. Particularly when the object is located in an open space, which means there are no other objects close by or right next to it, the learner can walk around the object as long as he/she is close enough or nearby the object's Location, and has mobile device facing the object. Hence, the mobile device's orientation related to the real-life learning object becomes very important.

The Location Aware object identification algorithm utilizes the concept of the Relative Orientation that will be discussed later in this section. This algorithm also uses two-dimension geographic coordinate information, namely latitude and longitude, to calculate the distance between the learner and the real-life objects. The mobile device's digital compass can get the angle between the mobile camera face and the true north, and then the algorithm can calculate out the angle between mobile camera face and the real-life object. Both of the angles are then used to decide whether the identification tags and the Self-adjust learning contents should be displayed on the screen or not.

Distance between Mobile Device and Real-life Learning Object

In the MOIAR eLearning condition, there could be numerous genuine learning objects identified with the learner at a specific Location. With a specific end goal to adequately use the restricted screen space on the cell phone, and additionally to give the 5R Self-conform learning substance, just a specific number of genuine protest ID labels and substance ought to be shown at the place and time. In the MOIAR application, just protests that match the learner's close to home learning profile and status are incorporated into the ER information show as Objects of Interest, and the genuine question distinguishing proof labels of just those items might be shown on the screen at the correct Location. Truth be told, in the MOIAR learning condition, learner could be close-by and see a few genuine learning objects in various perspectives at one Location. Be that as it may, the learning substance are shown on the screen just for the genuine learning objects that the learner's cell phone's camera focal point is indicated inside the pre-designed separation run.

Subsequently, the relative protest recognizable proof calculation is intended to register the introduction subtended from the learner's present Location to every genuine learning object at the Location. The MOIAR uses two organize frameworks to actualize the calculation. The primary facilitate framework is the first geographic arrange frameworks, known as the Polar organize framework, which uses the scope, longitude, and the North Pole based introduction. In light of the Polar organize framework, every genuine taking in question's Location is shown as (ϕ_o, λ_o) as a known parameter, which is predefined and put away in the RLO information demonstrate. The learner's present Location is shown as (ϕ_m, λ_m) as a sensor parameter. The subscript "o" and "m" speak to separately genuine learning object and the cell phone (i.e. alludes to the learner's present Location). Firstly the calculation is to figure the separation, D from the learner's present Location to every genuine learning object. The computation depends on the Spherical Law of Cosines is appeared in equation (1):

$$D = R * \arccos [\sin\phi_m * \sin\phi_o + \cos\phi_m * \cos\phi_o * \cos(\lambda_o - \lambda_m)] \quad (1)$$

The ϕ_o and ϕ_m show their scopes of the learner and the genuine learning object, the ϕ_m and ϕ_o demonstrate their longitudes, and the R is the range of the earth in meter. In the equation, R is a steady, $R=6.371 \times 10^6$ meters. The geographic directions of the learner are obtained from the GPS recipient of the cell phone, and genuine taking in protest's geographic directions are put away in the database of the MOIAR application framework. The scope and longitude arranges must be changed over into Radian if their unit of measure is in degree. In light of the distinction of the separations from the genuine learning item to the learner, the genuine articles are sifted through on the off chance that they are not inside a pre-arranged separation go from the learner's present Location.

3.2.2 Direction between Mobile Device and Real-life Learning Object

The orientation of the mobile device defines the angle between the mobile device camera lens and the real-life learning object, which is one of calculation criteria for the content display. For example, the learner might be standing on the different side of the real-life learning object, which would require the learner to turn the camera lens to a different direction in order to get the right content to be displayed on the screen properly. As mentioned above, the mobile device's current Azimuth, each real-life learning object's Azimuth, and the angle subtended between the two Azimuths, are the critical elements to accomplish this algorithm. The mobile device's current Azimuth is indicated as θ_m , which is also a sensor parameter and is measured in Radian, discussed in the later paragraph. Another coordinate system is the MOIAR coordinate system that based on the Cartesian coordinates, which computes the Azimuth of the each real-life learning object that is subtended to the learner's current Location and the North Pole. In the MOIAR coordinate system, the learner's current Location is indicated as the coordinate origin.

The MOIAR coordinate system contains two key variables, ϕ and λ . They respectively indicate the computed west to east axis and north to south axis variables that are subtended from the learner's current Location to each real-life learning object at the Location. The formula (2) for calculating the $[\Delta\phi, \Delta\lambda]$ is shown as follows:

$$\Delta\phi = \phi_o - \phi_m \quad (2.1)$$

$$\Delta\lambda = \lambda_o - \lambda_m \quad (2.2)$$

After $[\delta\phi, \Delta\lambda]$ is figured, which demonstrates the new arrange variable between the genuine learning object and the learner's present Location, the Polar organize framework is then thoughtfully changed over into the MOIAR facilitate framework, which uses the learner's present Location as the facilitate source. As specified above, keeping in mind the end goal to recognize the correct genuine protest and show the correct substance when the learner is confronting the cell phone on the correct introduction to every genuine learning object, and to further guide the learner in regards to which bearing to confront the camera focal point, the Azimuth of the learner's present introduction and the Azimuth of every genuine learning article is processed. The idea of the Azimuth in the MOIAR facilitate framework is appeared in figure 2 and the registering equation to additionally figure the Azimuth θ_c is exhibited as takes after:

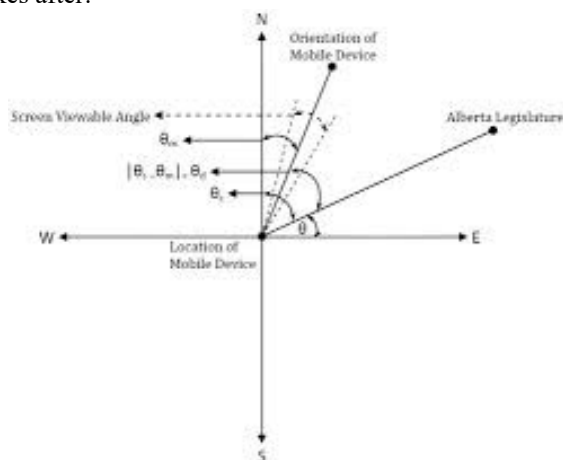


Figure 2: The concept of the MOIAR coordinate system in the algorithm

$$\tan\theta = Y_c / X_c \quad (3.1)$$

$$\theta = \tan^{-1} Y_c / X_c \quad (3.2)$$

$$\theta_c = 90^\circ \text{ or } 270^\circ \pm \theta \quad (3.3)$$

In the MOIAR arrange framework, the edge between the line from the facilitate cause toward the North Pole and the line from the organize birthplace to $[\delta\phi, \Delta\lambda]$ alludes to the Azimuth of genuine learning object spoke to as θ_c . Keeping in mind the end goal to register θ_c , the edge θ between the learners, the genuine - life learning object, and the ϕ pivot must be figured first by utilizing the Tangent Trigonometric Functions. Further, as indicated by $[\delta\phi, \Delta\lambda]$ that finds the quadrant in the MOIAR organize framework, the entire Azimuth θ_c will be found. At the point when ϕ is sure and $\Delta\lambda$ is sure, it implies the genuine learning article is situated in the main quadrant and θ_c will be $90^\circ + \theta$. At the point when ϕ is certain and $\Delta\lambda$ is negative, it implies the genuine learning article is situated in the fourth quadrant and θ_c will be $90^\circ - \theta$. At the point when ϕ is negative and $\Delta\lambda$ is

negative, it implies the genuine learning article is situated in the third quadrant and θ_c will be $270^\circ - \theta$. At the point when ϕ is negative and $\Delta\lambda$ is certain, it implies the genuine learning item is situated in the second quadrant and θ_c will be $270^\circ + \theta$. Table 1 shows diverse situations when Azimuth θ_c is situated in every quadrant.

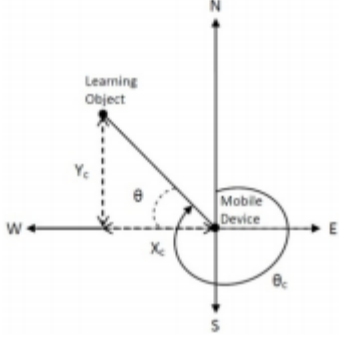
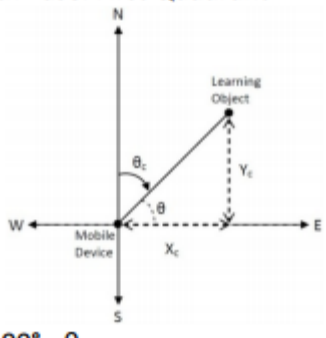
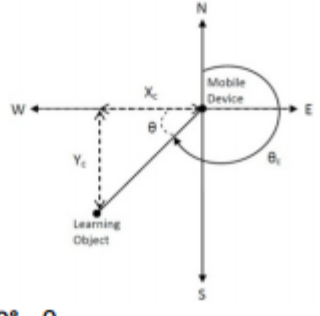
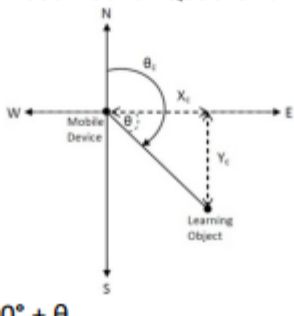
The Object Identification calculation proposed and actualized in this paper is for the MOIAR application to viably recognize the genuine learning objects in light of the computed Azimuth and the subtended edge, whatever the learners' present Location and introduction are, and at whatever point learners transform them. Not at all like earlier SA learning applications that oblige learners to remain inside a specific separation from the question or center the camera focal point before the optical marker, the MOIAR application gives the learners a chance to stroll around the genuine learning article and still observe the recognizable proof labels and the Self-change learning substance, the length of the camera focal point is confronting the genuine learning objects. Advance, the MOIAR can likewise manage the learner to other genuine - life learning objects situated with the question recognizable proof labels. Likewise, the Self-modify component custom-made the learning substance as per the learner's learning status and the cell phone's present Location status. Looking at the MOIAR approach created in this exploration with earlier portable SA learning research applications, the majority of the earlier applications can just give learning substance in light of the reading material or customized to the protest itself. The MOIAR framework can distinguish the objects of enthusiasm as well as gives the substance of intrigue. The Self-conform component helps the learners in developing more important information in light of the fact that the learning procedure and learning substance are coordinated with societal culture, life-setting, and individual learning inclinations.

When Azimuth θ_c is figured, the last stride is to register the subtended point. The subtended point is figured by the distinction between Azimuth of the learner's present introduction, which is detected by the implicit computerized compass on the cell phone, and the Azimuth of every genuine learning object θ_c . Advance, the question recognizable proof calculation can figure out if the protest ID labels and the Self-alter substance of the question ought to be shown on the screen or not, as per the equation (4) underneath:

$$\theta_d = |\theta_m - \theta_c| \leq R \quad (\text{ex: } R = 5^\circ) \quad (4)$$

In the equation (4), θ_d alludes to the edge contrast between the Azimuth of the learner's present Location and every genuine learning object. Variable R alludes to the Rule in the calculation that is utilized to decide the mistake band for showing the question distinguishing proof labels and the Self-alter substance. The motivation to register θ_d as a flat out esteem is that the MOIAR framework ought to show the question distinguishing proof labels and the Self-change substance regardless of whether the genuine learning article is on the left side or right half of the learner. For instance, if θ_m is 45° and θ_c is 40° , the first θ_d is $+5^\circ$, which implies the question, is marginally left to the learner.

Table 1. Azimuths in different quadrants of the algorithm

Mobile Device Coordinate		Mobile Device Coordinate	
-	+	+	+
RLO Coordinate		RLO Coordinate	
North West: Second Quadrant 		North East: First Quadrant 	
$\theta_c = 270^\circ + \theta$		$\theta_c = 90^\circ - \theta$	
Mobile Device Coordinate		Mobile Device Coordinate	
-	-	+	-
RLO Coordinate		RLO Coordinate	
South West: Third Quadrant 		South East: Fourth Quadrant 	
$\theta_c = 270^\circ - \theta$		$\theta_c = 90^\circ + \theta$	

Then again, when θ_m is 45° and θ_c is 50° , the first θ_d is -50° , which implies the protest is somewhat on the correct side of the learner. On the off chance that we set the govern as 5° , subsequent to figuring θ_d with a flat out esteem, the protest distinguishing proof labels and the Self-conform substance would be shown in both cases.

THE MOIAR IMPLEMENTATION

This section describes how the MOIAR works in the research environment created for the purpose of demonstration through a scenario study. There are three students in this scenario. Will is currently enrolled in the English program, and he is taking course 604 “Traveling English” and he is on unit one with knowledge level one. Jimmy is currently enrolled in the Politic program, and he is taking course 704 “Politic Science” and he is on unit one with knowledge level one. Alex is currently enrolled in the Architecture program, and he is taking course 804 “Introduction to Architecture” and he is on unit one with knowledge level one. The real-life learning object is the Alberta Legislature building.

Learner Validation Interface

The learner confirmation interface contains two sections of data, the individual learning profile and status and the learner's present Location. The screen shots are appeared in figure 3. The MOIAR versatile customer application shows to the learners the courses and units that they are right now learning with the MOIAR application, the learning level of the learning substance that they will get, and their cell phones present GPS Location data.

Hello! Will	Hello! Jimmy	Hello! Alex
Program: English	Program: Politic	Program: Architecture
Course: 604	Course: 704	Course: 804
Unit: 1	Unit: 1	Unit: 1
Level: 1	Level: 1	Level: 1
Latitude: 53.538984°	Latitude: 53.539305°	Latitude: 53.539333°
Longitude: -113.507411°	Longitude: -113.507579°	Longitude: -113.507539°
MOIAR!	Logout	MOIAR!
Logout	MOIAR!	Logout

Figure 3. Individual learning profile and status

Location Aware Reality Learning Object Identification

At the point when the learner taps the MOIAR catch, the application will dispatch the question distinguishing proof process controlled by the Location Aware Object Identification Algorithm to begin recognizing the genuine - life learning object around the learner's present Location and show ID labels of the Location Aware learning objects as appeared in figure 4.

The screenshot (4 - A) demonstrates that the MOIAR application effectively recognized one of the genuine learning objects, the Alberta Legislature Building, with the question's name and the separation showed upon the screen. The screenshots (4 - B) and (4 - C) show diverse distinguishing proof labels at a similar Location as indicated by their introductions and movements. In screenshot (4 - B), the learner was remaining before a house that is situated at the address 2422 111B Street, where the house was 0.02 km far from the learner. At the point when the learner confronted to the house appropriate by it, the label demonstrates the neighbor house's address, the separation from the learner is currently appeared as 0.03 km (screenshot 4 - C). The houses are predefined and put away as a genuine learning object in the database. Facilitate, when there are more than one protest in the camera see, the MOIAR versatile application will change the measure of the question recognizable proof labels as per the separation; the nearer the question is to the learner, the greater the tag will be.

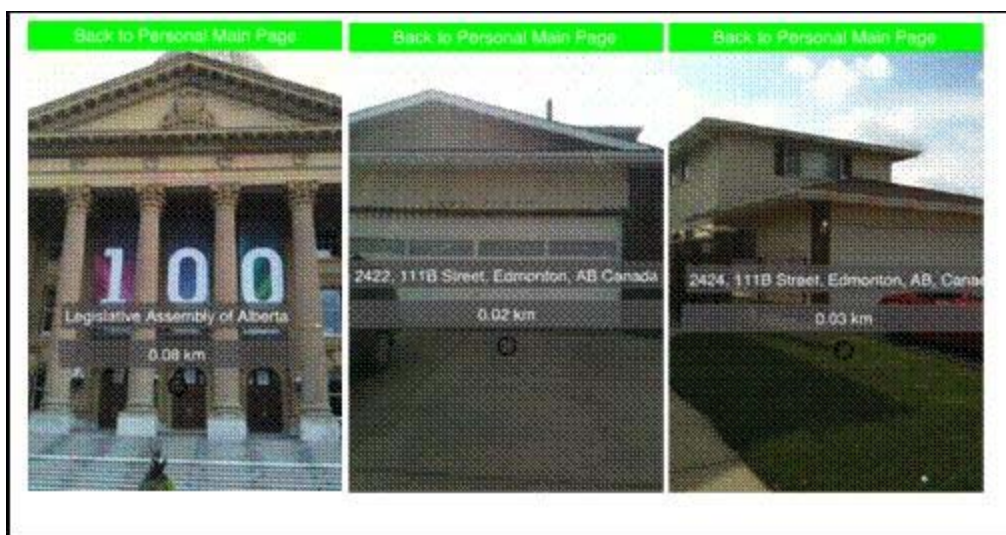


Figure 4: Location Aware learning object identification tags

The 5R Self-adjust Learning Contents

The question recognizable proof labels are touchable catches, and the learner has simply to tap the labels to get the nitty gritty learning substance. The MOIAR application can recognize various learning objects in the meantime, yet the screen space on the cell phone is restricted. So it is ideal to show just the question

distinguishing proof labels at first in light of the fact that the learners don't have to see the substance until they are directly before a genuine learning object and are prepared to learn. Figure 5 indicates diverse Location Aware learning substance superimposed on the genuine learning object, the Alberta Legislature building adjusted to their own learning profiles and statuses of three learners. There are three sections of substance in the substance see. The initial segment on the top demonstrates the name of the learning object; the second part underneath demonstrates the learner's present individual learning status, and the third part indicates learning substance. As appeared in figure 5, screenshot (5 - A) is traveler data of the Alberta Legislature Building for the course "Voyaging English". Screenshot (5 - B) demonstrates the political history of the working for the course "Political Science". The last screenshot (5 - C) gives the plan and engineering of the working for the course "Prologue to Architecture"

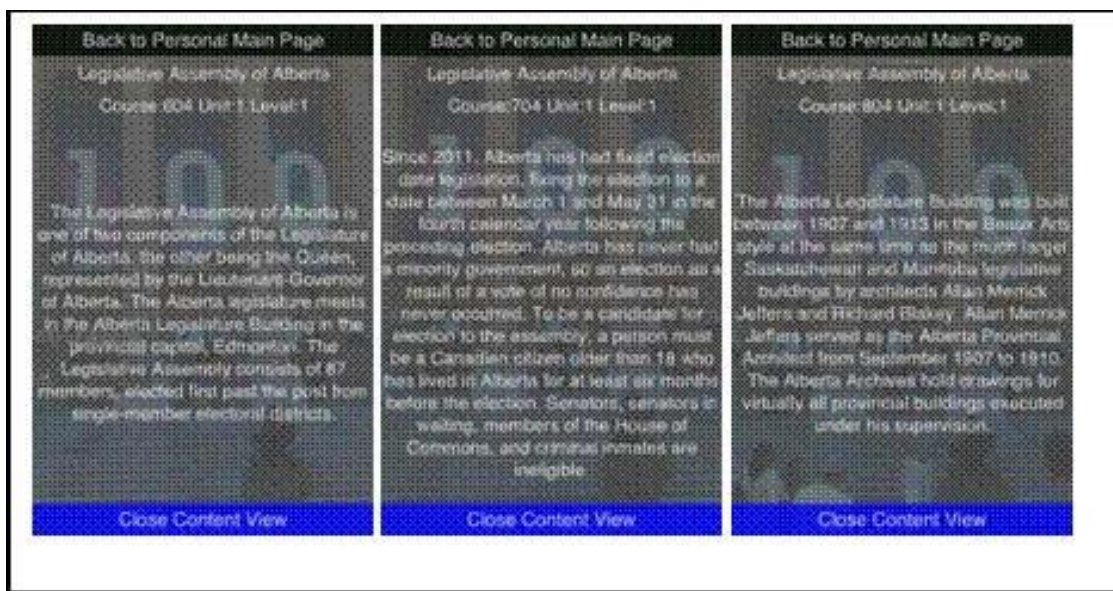


Figure 5: The Self-adjust Location Aware learning contents superimposed on the real-life learning object

CONCLUSION AND FUTURE WORK

The Location Aware Object Identification computation showed and executed in this paper is for the MOIAR eLearning application to suitably perceive the honest to goodness learning objects in perspective of the learners' current Location and presentation and certified taking being referred to's Location information. The MOIAR application allows the learners walk around the certifiable learning article and still watch the recognizing verification names and the Self-adjust learning substance, the length of the camera point of convergence is going up against the bona fide learning objects. Advance, the MOIAR can in like manner direct the learner to from one authentic adapting thing to others separate by challenge recognizing evidence marks. The Self-modify segment can tailor the learning substance as demonstrated by the learner's learning profile and status and the mobile phones current Location. The MOIAR application can perceive the objects of energy and additionally give the substance of interest. The 5R Self-alter part helps the learners in growing more noteworthy data in light of the way that the learning method and learning substance are fused with societal culture, life-setting, and individual learning slants. The centralizations of this examination are on the count change and its execution to reinforce using AR technique in Location Aware eLearning setting. Moreover inquire about should be on how the AR framework overhauls the eLearning application and how the MOIAR has influenced on the learners in the eLearning setting.

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MANAGING INTERACTION RELATED RISKS ON THE DEVELOPMENT OF E-LEARNING IT PROJECTS: A CASE STUDY OF A LANGUAGE INSTITUTE E-LEARNING PLATFORM DESIGN IN IRAN

Musta Ilkan¹, Mobina Beheshti², Maryam Behendish³, Erim Atalar⁴

Eastern Mediterranean University, School of Computing and Technology

¹Mustafa.Ilkan@emu.edu.tr, ²Mobina.beheshti@emu.edu.tr, ³Maryam.behandish@emu.edu.tr,

⁴atalarerim@hotmail.com

ABSTRACT

The aim of this research is to present the possible problems and complications in designing and developing E-learning IT projects. The study is focused on how e-content design and delivery risks can be prevented by a more practical and beneficial communication between the target group and the design team and with the help of providing some basic knowledge of pedagogical terms and means that provide the IT project team with a better understanding of learning. Hence, this study includes the problems involved in the steps of defining strategies, objectives, planning and project management. This research designed as a qualitative study, total 12 interviewees participated in this research. The data were collected by open-ended questions and interviews. The accumulated data were assessed by the descriptive analysis method. The participants' overall attitude towards the proposed methods was generally positive.

Keywords: e-Learning content management, IT project management, Risk management, Communications management

INTRODUCTION

Impact of technology on learning is an undeniable fact of today's world. That is for sure the reason why almost every learning institution, from local schools to world-class universities, are investing huge amounts of money every year to build up stronger and more developed learning environments with the use of technology, especially e-learning environments. However, one of the important issues which is involved in this field is whether the tools and the contents delivered in these environments can be considerate enough of learners' needs, preferences and also aligned with their perspectives and expectations of e-learning. As it is stated by Vygotsky, 1978: language and communication are the two aspects which constitute the essence of a culture. Therefore, not enough theory of online learning and not adequate e-learning model can end up bringing lack of interest and involvement of learners in e-learning environments. In other words, if these contents are not based on pedagogical principles and reliable approaches to systematic instructional design, there is a tendency that the whole philosophy of learning might fail. The reason is without interactive contexts, it will be out of reach to manage interactions. It happens because usually we consider technology first while planning educational environments and then we move on to how this piece of technology or environment can be applied to educational uses, and as it is said (InfoDev,2005) there is a lack of contribution to the existing cleavage between technology and pedagogical innovations in learning. To cover this existing issue, it is of high importance for IT project team members and managers to gain basic and necessary understanding of what context and interaction mean as pedagogical terms. It will provide them with an insight of the vitality of communication between the learners both that the level of using the technology and also on the level of designing the environments in the first place. This will hopefully lead to lower risks of delivering e-contents which might lack adequate features a needed abilities to virtualize real interactions among learners and teachers in the classroom. The main addressed issues in this field have usually been about the constraints and the technological risks of delivering e-learning projects and how to prevent risks in terms of designing and deploying in the environment. This study, however, focuses mainly on the design of e-content with regards to educational and interactive issues and how the attention of design should be brought to real learning goals and outcomes.

LITERATURE REVIEW

(O.Giardina et al, 2007) presents a study on how to manage technological constraints and educational aspiration in a multi-cultural e-learning environment design, focusing on the fact that e-learning depends on the involvement consideration and constraints imposed from the economic and labor markets and the world of human sciences. It is also mentioned in the paper that the learning environment design based on the finding of future research could probably provide directions to make online interactions and communications more successful in developing learning critical thinking and epistemological skills.

(M.Martins et al, 2014) produced a work on constraints and requirements in designing and e-learning environment by actually designing a real virtual lab (The VEMA) with the objective of perusing five

characteristics of an effective system, one of which referred to as consistent with the need of the learners and the employers. It is mentioned in the paper that if the students is not motivated the role of e-learning with its unsupervised teaching will not be effective. According to this paper, quality e-learning courseware requires several aspects to be covered in order to achieve its purpose. One of the aspects is referred to as thorough knowledge of the content as well as methods of delivery and learning theory. Therefore, it cannot be limited to put content online and assign chores to be completed by the learners, but also learning goals and outcomes must be included.

(B & M.Fetaji, 2007) referred to successful learning as e-learning concepts and factors that substantially influence learning. They based their analysis on 17 e-learning indicators. Among the mentioned indicators are a) type of learners, b) learning style and intelligence of learners, c) content, d) preferences of e-learning design, e) motivation and performance-self-efficacy (the learner's senses their effectiveness in e-learning environment). The findings show that these indicators can play an important role in delivering e-learning contents and that this can be applied to e-learning projects. Thus, individual learning services are needed to support learners according to their subjective preference profile.

(J.Bartz, 2010) believes that the learner is part every stage in the e-learning project development and she discusses the point that how well the learner engages with and achieves the objectives of the project, introducing the learner as the fourth constraint along with time, cost and scope. She also refers to the fact that the concept of the learner engagement as the measure of quality should be considered by project managers as learner's involvement in each stage of project management process. However, the only involvement of the learner in the process is within the phase of initiation where learners are identified and planning phase where the team is persuaded to think like a learner.

(T.Surcel et al, 2009) looks at risk management on developing e-learning strategy from the point of vulnerability in e-learning. One of the vulnerability risk the paper refers to is the student associated risk which is explained as participation risk directly linked with the student and their expectations. It also states that the student's perception about this innovative style of teaching and learning might get worse if the course is so rigid. To manage this risk, it is suggested that the professor correlates his course much more explicitly in order to help students in the way that they can understand the course goals easily. Also, there is a reference to communication risk which is not solely related to e-learning systems, but generally to any IT system as learners communicate with a monitor, so it will be difficult to activate a good communication between students and to inspire them with the feeling of being a member of a bigger team that can contribute a lot to the performance of students.

(D.Axia and D.Wang, 2011) proposed and presented an integrated e-learning platform where students can share and operate these resources at any time their core management platform is filled with any applications and tools related to e-learning and supports the creation of a self-learning and innovative learning environment with the aim of providing new ways of user interaction and data representation in a knowledge based environment in which teachers and students cooperate to share knowledge. This was the result of the effort to make a step towards a more effective e-learning experience.

(B. Baruque et al, 2014) refers to other relevant issue that concerns the impact of content instructional materials on the learner's motivation to complete the course.

(MC Kenny et al, 2015) refer to teachers as designers for classroom activity and instructional resources who are also capable of creating their own technology-enhanced learning material. They attest to the critical importance of teachers as designers and elaborate on how to bring together design a cross disciplines with the literature on teachers as designers. In addition, a number of other studies have looked as teacher design capacity in natural settings from a technological, pedagogical, and content knowledge and perspective. Hence, teacher's capacity with technology includes the ability to blend together knowledge that emerges from the intersections of content, pedagogical and technological knowledge and their interdependency with experiences and contexts (DiSessa 1988; Kali, Goodyear et al. 2011; Mark-Auskait & Goodyear 2014).

(H. Al-Samarraie et al, 2003) discuss that the current integration of instructional design theories into e-learning has mainly led to platforms that are based on how learners interact with the representation of content during a particular task and how the representation fits into their learning process. They also address the possibility of learners losing attention and focus on learning through e-learning. One of the 3 major components, they base their research on is the external variables, which include motivation and interaction as well as attention.

(Lehtinen, 2003; McCombs & Vakili, 2005) believe that the negative impact on students engaging with e-learning environments and platforms are likely the results of students' needs for multiple forms of support which are probably not provided.

(Botturi, Cantoni, Lepori & Tardini, 2006; Hwang, Tsai & Yang, 2008; Martinez, 2003) state that the adverse effect may also rise from a failure to use appropriate design strategies hired for representing learning content.

(Dutton, Dutton & Perry, 2002) did some directed research to determine the role of students in online classes and how different it could be from their role in traditional lecture classes. They found that a high percentage of students who begin e-learning courses do not complete them.

Giannoukos et al (2008) mentioned the fact that current e-learning tools lack adequate learner interaction, leading to students getting motivated enough and bringing the result of their shifting away from e-learning.

Hardt (2009) insists that we lack a solid understanding of how certain forms of learning might help students understand content in e-learning.

According to Moore (2002), cyclic relations involving interactions between learners and e-learning content usually promote the development of the necessary metacognition for understanding content and thus learning in the e-learning environment.

Sweller (P. 124): "The more elements that interact, the heavier the working memory load."

(B.G. Wilson, 2004) recommends that e-learning environment designers carefully consider all aspects of the learning experience, because learners often encounter the stimulus materials when they are sitting alone at a computer, away from easy coaching or support from an instructor. He suggests that e-learning environments provides collaborative workspaces that include information resources and tools to do the work alone and with others and diagnose learners' needs and that learning outcomes are codetermined by designers and participants. He believes that there's a lot to contribute to the process of envisioning how online environments can foster learning and interactive environments that will be developed in ways that have significant learning potential.

AIMS AND OBJECTIVES

The main aim of this study is how e-content design and delivery risks can be prevented by a more practical and beneficial communication between the target group and the design team and with the help of providing some basic knowledge of pedagogical terms and means that provide the IT project team with a better understanding of learning. In order to reach the goals above, this paper seeks to answer the following questions listed here:

- I. How a better and more in-depth communication with teachers and/or learners in order to discuss teaching and learning issues would contribute to design team's better understanding of the content and designing it?
- II. How an input session of basic teaching pedagogical approaches could help e-content design team members to come up with more convenient design ideas for delivering practical interactive contents?
- III. How observing actual classroom sessions would provide the e-content design team with a clearer insight on the real meaning of interaction in learning?
- IV. How getting involved in a real-life language learning experience can have effects on the design of more useful and beneficial e-learning content?

METHODOLOGY

Through all different research fields, there has always been the emphasis on thorough knowledge of the content and proper methods of designing and delivering the content on an e-learning platform is crucial to the success of the project and achievement of goals.

With the huge wave of technological advances and the fast-growing tendency of interest among the knowledge seekers, there is a competition for more innovative and modern ways of learning and accessing information and knowledge. Therefore, it is of utmost necessity to have full focus of what keeps the learners interested and motivated to continue once they have stepped into an e-learning environment. A J. Bartz mentions in her paper(2010):" *The learner is the most important consideration in any e-learning project. The same holds true for project management of an e-learning project. Models of project management can be adapted to reflect the importance of the learner; both as a measure of project requirements and quality, and as a key factor in each stage of project management.*"

Yet, not much is done on how much the end-users are involved through the process of designing and how much of risk management in content delivery is involved (L.B. Baruque, 2014). She believes that the quality in the production of content materials is one of the most critical success factors in e-learning products and that the learning component is that which differentiates the e-learning projects from other types of projects. Thus, What matters most is the prevention of boring repetitive activities and chores on e-learning platform as it can be one of the most dominant reasons why learners might lose interest in it all after a while. Therefore, the IT e-project team needs to be provided with a more in-depth understanding of what goes on in a face-to-face classroom and how the most intriguing and exciting learning experiences in the classrooms can be put into design of e-learning environments and platforms.

Based on experience and research, there are several most referred-to reasons why learners enjoy face-to-face learning environments. One is the interaction they have with peers and the teacher. Humans are known to be sociable creatures and enjoy talking to each other, sharing ideas and personalizing different topics or issues, hearing from others and reflect on the topics and points of discussion while showing their feelings and expressing their attitudes. That is how they learn and develop. Learners are no exception.

As a matter of fact, interaction is the main key to learning better and understanding better. Types of interactions vary depending on the activities and tasks that the teacher designs according to the goals and objectives of the lesson. Teachers play a very important role in designing the lessons and sessions to be either more teacher-centered or learner-centered. Thus, it is assumed that the understanding of the importance of interaction and task design can contribute a lot to a more effective e-learning environment design.

In addition, what a learner desires and expects from an e-learning course can be more demanding and challenging on the level of design. Learners come in different learning styles, making them love and enjoy doing various activities. Learning styles are one of the most important pedagogical terms every teacher gets involved in and good and resourceful teachers spend hours preparing lessons which can suit and address a wider range of learning styles so that every individual learner enjoys the level to some good acceptable extent. Therefore, the expectations of learners raise the bar on the e-learning environments and the design of e-learning contents. It is because they assume that technology is a powerful means that can bring the impossible to possible.

With enough attention and consideration to the main teaching methodologies that have approved to be successful and yielding, there is a better chance of avoiding the risk of designing and delivering e-learning contents and platforms which might doom to fail if they are not as interesting and involving as a real classroom session. This can be covered if there is a mutual and more friendly communication between the end-users, i.e. learners and teachers and the project team. A better understanding of who the learners are, what their needs are, what they enjoy doing and how they enjoy learning can be a real asset in designing an environment which gets as close to a real classroom as possible.

To reduce the risk of failure in designing and delivering e-content which does not suit the learners' needs and interests, two solutions are introduced in this paper which can be tested either separately or combined:

Solution one

Nothing beats experience. A good and also fun way to make this link between the project design team and the learners and teachers is to actually involve them in a real classroom and make them be learners to feel and understand the learners. Providing a real classroom sessions for those who might merely remember how they learned and what processes they went through but now are defining those processes in a virtual world, will be a good practice.

On the one hand, it gives a wake-up call to the nostalgia of being a learner as they were in the old times and the experience can be quite refreshing and interesting. On the other hand, it makes the whole abstract idea of learning more authentic by putting them in a real-life situation that helps them understand how every piece of activity, task and interaction among learners can influence their learning and how the outcomes are to be evaluated. Taking part in actual classes with the goal of obtaining a better understanding of how learning happens and what approaches, means and methods a teacher utilizes to foster and facilitate learning can be effective.

Also, it helps the design team to come up with more innovative ideas how to design and implement interactive tasks to bring them closer to real interactive activities in a real classroom. Monitoring a classroom can be a very handy way to make every ambiguity to become clear for the design team.

Solution two

This solution will work best if it is followed by the first one. In case of the impossibility of monitoring real learning environments, providing one or a few inset sessions for the project team in which some general and useful basic knowledge of teaching and learning is introduced can be useful in developing better platforms. This can include presentations which provide an explanation of some terminologies related to teaching and learning approaches supported by a limited yet enough video clips to make it more tangible. Bringing teachers in, communicating with them through the phases of the design and hearing from their invaluable experiences of how designing activities can promote learning and whether the designed activities on the platform can help better understanding of topics is also a means to consider.

Putting the Solutions on Debate

The Basis:

This study was performed on a design team of 12 IT professionals who were working on the design and implementation of an e-learning platform. The platform was supposed to be used as an aiding tool for the learners in English language to have more practice and further engagement with the language outside the classroom. The project was funded by a language school whose main courses were English language, IELTS and TOEFL preparation and ESP courses. A privilege this project team had been one of the members who had professional experience of teaching along with her IT skills. The idea of such study bloomed from the different points of view she had towards different activities which were being designed on the platform and the contents which were being handled.

Table 1. Interviewees information list

Gender	Female	3
	Male	9
Age	23-25	4
	26-28	2
	Above 28	6
Software Development Experience (years)	1-2	3
	3-4	6
	5-7	3

The platform consisted of three main sections:

1. A section for further practice on different skills that learners learned and were involved with in their class sessions.
2. A section for an exam review and practice where learners could have access to previous exam papers and materials for self-study practice.
3. A section for interactive and multimedia exercises where learners could practice speaking.

As it came out from the interview, there were certain times when this specific member pointed out details that had not been foreseen by other members of the design team. There were also several constructive discussions in which the whole approach towards the design of a specific piece was turned around due to a different perspective shared by the once-a-teacher design team member.

The most considerable issue was the how-to of the design of interactive section. This was the part which caused the biggest controversies among the team members as the once-a-teacher member was mainly opposed to the traditional and repetitive styles of the interactive exercises, complaining that they were rather boring and not really communicative and interactive enough for learners and that the reason why many learners gave up on e-learning environments over a short period of time was that they did not see a point in doing a bunch of activities they could do in practice books as well. This can be one of the most important risks which must be prevented whereas usually it is ignored because risk management of projects mainly deals with financial issues rather than how the project will actually fall in place after it is enclosed and delivered.

The Gap:

During the phase of design, there were long discussions on how making the content more meaningful, objective-oriented and interactive on the e-learning environment. Clearly, there were quite diverse approaches had ideas from all the members. However, the once-a-teacher team member looked at it all from a whole different angle. The huge difference between the this specific member and the rest of the team was the in-depth knowledge and

experience in teaching and involving with learners in an authentic classroom environment. Thus, how she interpreted the words “communicative” and “interactive” was totally different and also she approached every activity within the content from a teacher’s side rather than an IT design team member’s side.

Therefore, the idea of bringing integrity among the members of the team in terms of ideas and approaches arouse. For this reason, the questions were designed around the two solutions which were previously stated. By using 4 questions, this study focused on whether it would be possible to either close this gap or making the opinions more integrated and the team’s understanding of teaching and learning more solid.

As the questions were not borrowed from other previous surveys and questionnaires, it is important to mention that they were generated originally based on the following references:

Question 1 is based on the opinion of B. Feteji and M. Feteji(2007) who stated in their paper that type of learners is one of the indicators contributing to successful e-learning design because it reflects the preferences of learning styles in teaching as well as delivery style to students. They concluded that e-content not suited to learners’ learning styles is rated as the biggest obstacle and barrier to enhanced learning via e-learning environments.

Question 2 is based on the idea of S. McKenny et al(2015)’s discussion on how to develop conceptual infrastructure that could help frame and discuss teacher design work as compared with the expert design work. In their paper they insist that conceptual infrastructure is necessary to understand how teachers think(Horn 2010) and how designers reason(Nelson & Stolterman 2012). Also, there is a reference to (Boschman et al. 2014) stating that teachers intuitively address classroom practical concerns while designing technology-rich learning activities and materials, but are also influenced by their own existing knowledge and beliefs. In addition, L. Oubenaissa(2007) refers to the fact that a profound understanding of the interface should generate pedagogical and educational designing principles rather than only physical management of the learning environment.

Question 3 is based on a claim from Anderson(2005) that there lacks a theory of online learning and a valid e-learning model which take into account the aspects of the language and ways of communicating. Furthermore, a reference can be made in a report by Giannoukos et al.(2008) that current e-learning tools do not adequately support student interaction, which leads to students being insufficiently motivated and shifting away from e-learning.

Question 4 is derived from the proposal of J. Bertz(2010). While she suggests that within the planning phase of project management of an e-learning project, the team needs to think like a learner as she holds the importance of the concept of learner engagement and involvement in each stage of the project. Through the project they developed, they applied the strategy of thinking like a learner, therefore this was extended to the idea of letting the content design team experience being a learner and thus the question was based upon it.

RESULTS AND DISCUSSION:

The above case became the fundamental of this study in order to find out how communication between the design team of the project with teachers and learners can affect the design and delivery of the content they are working with. Therefore, a survey was designed based on several questions regarding the approaches which were previously presented in the methodology of this paper.

The survey consisted of 4 questions with reference to the experience of the design team members in working with a teammate who had been a teacher and possessed solid knowledge and experience in this field and the discussions which arouse among the team while working on the design and delivery of the content. Some of the answers are not brought up here due to being quite short or very similar to the ones shared in the paper:

1. *Based on your experience, how do you think a better and more thorough communication with teachers and/or learners in order to discuss teaching and learning styles would contribute to a better understanding of the content and designing it?*

The aim of this question was to raise awareness among the design team on the fact that a closer relationship between the project design team and the target people could be a way to get a better view of what they are designing and delivering. Here are some of the answers:

"I think teachers and learners' ideas on what they expect from the platform can change our perspective about the contents we work to deliver on e-learning scale."

"It is important to talk to learners specially to realize what makes them want to continue working with the e-learning platform can give us signals on how to design and implement content."

"It shouldn't be a big deal really. We as content designers are mainly told about what we are designing and the frameworks are usually present. I don't think there could be much change applied to it whatsoever."

"As a designer of e-learning content, and to be honest, this is my first experience, I think talking with teachers and learners and asking them what they really want could give me more confidence on the job I'm doing."

"To me, it's fun to meet them and ask them what they really expect to see and experience one the project has been delivered. I think their ideas could be pretty helpful."

As it is evident from the answers, the content design team believed that a more authentic communication between them and the target group could contribute to their better understanding of what they have in hand and how they need to turn the content around so to keep it as useful and practical as they are dealt in the class and yet transforming them into pieces for an e-learning platform. However, two members of the team had almost same ideas, believing that what they do is based on what they are told to do and so it might not have a considerable impact.

2. *Based on your experience, how do you think an input session of basic teaching pedagogical approaches could help you come up with more convenient design ideas for delivering practical interactive contents?*

The objective of this question was to trigger the point that whether a little amount of teaching/learning methodologies could broaden the design team's sight on how to design content which can pursue the teaching/learning aims to the fullest. Here are some of the answers:

"I don't think we really need to know basics of teaching approaches and ways and methods that teachers hire to teach stuff. But I believe it would be good if we got to know what the aim of different activities are on the whole so to help us implement better ideas while designing them for e-learning."

"It's fun to learn what goes on in a teacher's mind when she is teaching something through and activity. But I am not sure if implementing all of them in e-learning would be possible for the time being... or if it is, it should be a really sophisticated job. After all, teachers are human, e-learning environment isn't!"

"I guess it is always a good help. I mean... why not? If a teacher tells me how she teaches a piece, I might be able to challenge it and try to design in a way that gets as close to the teacher's way as possible."

"She, the once-a-teacher team member, used to tell us how a certain activity in the content could go through lots of ups and downs in a real classroom to take learners from point A to point B and how probable it could be that the activity succeeds or fails in teaching a certain point. We don't know this stuff. It's quite complicated. I guess when it comes to e-learning, things become a bit frightening if every single activity can get that deep. I would say YES to teaching knowledge. "

Clearly, people were mainly in favor of getting some fundamental knowledge of teaching and they were astounded by the fact that there could be so many complicated details in language teaching and learning that are usually ignored while delivering e-content.

3. *Based on your experience, do you think observing actual classroom sessions would provide you with a clearer insight on the real meaning of interaction in learning?*

"I actually participated in a classroom with our teacher teammate. It was fun. While she was teaching, she would come to me and tell me how one single activity could be played around in several ways to bring up different interactive situations in order to get the learners to talk and use the language. It did in fact clear a lot of vague points in my mind."

However, I find it quite difficult to deliver such interactive content. Still, a classroom is a classroom. It's a whole different definition."

"I would like to go and see a classroom if I am dealing with content like that. If that's a practical idea, why not? When you see things in practice, it will give you a better understanding. Plus, what we as software developers perceive as INTERACTION is way different than what real life interaction means."

"Yes, we could get to see how learning through interaction happens really. As far as I remember, the biggest argument we were having while designing the content was that our teacher teammate kept whining that the activities we were designing were not interactive enough. We couldn't really get the point! I wish she could give us a practical example of classroom interaction. Then we would probably be able to put it in design."

"I wouldn't mind going and seeing a real interactive class session... if it is really interactive, I mean. I remember my own learning experience. It wasn't really interactive. I mean... what we had in the books we can put it in the e-learning content if it is all about how I studied. However, if there's something new and if styles have changed, I would fancy seeing it in real."

Based on the answers, there is a point which is being indirectly conveyed, and that is the fact that "interaction" and "interactive" need to be redefined for design team members. This could be better made clear if they observe how exercises or contents can be designed by teachers to be more learner-centered and involve learners as much as possible. This could be a great help to e-content design team, reducing the risk of delivering content which, is just in the form of electronic books, thus ending in the risk of learners losing interest in involving.

4. *Based on your experience, how do you perceive the effects of getting involved in a real-life language learning experience on the design of more useful and beneficial e-learning content?*

The objective of this question was to activate the possible learning experience the design team members had before and try to figure out whether recalling those details could in any way better the approaches of the e-content design they were applied, and that if they found the experience useful in terms of getting a better view on the job they were doing.

"I think there'll be good effects. If I experience being a learner, I will definitely develop better understanding of the learners' needs which could be beneficial to my work experience as I get to realize what ideas need to put into implementation in order to make the e-learning content and environment more useful."

"Real-life language learning experience is something I have had before. I don't remember much of what happened in the class. Plus, at that time I didn't know anything about computers... let alone being an e-content design team member. I guess it would be useful if I got involved in it again."

"I'm not sure. I don't know how the two could cooperate. I already know what I'm doing. I don't know how it might affect the job I'm already doing. I can't comment before experiencing it."

"Practice makes perfect. That's what teachers say. Maybe if we practice being learners, we will be better designers for e-content as well because we will get to understand their styles and tastes. For sure, there will be some positive effects. I might not be able to give clear ideas now, but sure there will be some."

The main point in answers is that there will definitely be effects. They were not quite sure what kind of effect they might receive, but there is a positive attitude towards experiencing it.

CONCLUSION

According to the literature review, there is not too much work on IT e-learning risk management in content development area. The literature addressed the current issues and risks in IT e-learning management mainly covering the financial aspects, so this study provides some novel approaches in order to fill out the gap. A qualitative approach was applied to an e-content design team of 12 to find out about their perceptions of teaching and learning and how a background or experience of teaching or learning can affect their design and delivery of the content on an e-learning platform. The two proposed methods, based on which the interview

questions were formed, comprise enhancement of both learning styles and teaching methodologies within e-learning. Learning styles are one of the most important pedagogical terms every teacher gets involved in and good and resourceful teachers spend hours preparing lessons which can suit and address a wider range of learning. Hence, the approach of this paper is to assess the fact that how making a connection between the project design team and the learners and teachers via involving them in a real classroom and making them be learners helps them better understand the learners, their styles and needs. Providing real classroom sessions for those project team members who might merely remember how they learned and what processes they went through but now are defining those processes in a virtual world, will be a good practice. Furthermore, the findings agree that some basic knowledge of the main teaching methodologies that have approved to be successful and yielding will give the project team a better chance to avoid the risk of designing and delivering e-learning contents and platforms which might doom to fail if they are not as interesting and involving as a real classroom session. This can be done by establishing a mutual communication between the end-users, i.e. learners and teachers and the project team. Further quantitative and qualitative work and study can be done to put to test the basic results which were delivered in this paper.

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MEASURING THE IMPACTS OF E-LEARNING ON STUDENTS' ACHIEVEMENT IN LEARNING PROCESS: AN EXPERIENCE FROM TANZANIAN PUBLIC UNIVERSITIES

Titus Tossy
Mzumbe University, Tanzania
tossy@mzumbe.ac.tz

ABSTRACT

This paper is located within the global debates about the impact of e-learning as one of the ICT on students' achievements in teaching and learning process in universities. From the perspectives of Tanzania, this paper provides a model for measuring the impact of e-learning on students' achievements in universities. The rationale for the investigation stems from the notion that despite the hundreds impact studies, the impacts of e-learning on student's achievements remain difficult to measure and open too much reasonable debate. This raised contradiction and elusive findings on the conclusion based on the impacts of e-learning systems on student's achievement. A Mixed method research methodology involving survey and interviews was employed in the collection of data for building the model. Multiple regressions technique was used to analyze the hypothesized relationships conceptualized in the research model. The model was built and validated using structural equation modeling and Delphi technique respectively. Measuring e-learning impact on student's achievements, indicators such as student engagement, student cognitive, performance expectancy, student control, student satisfaction, continue using, student motivation, student self esteem, student confidence on e-learning system have positive significance relationship with students' achievement. The model has the potential to policy makers, universities and other stakeholder to understand the impacts of e-learning after implementation in order to justify the total investment based on that technology. The novelty of this research lies in the extension of the findings in literature with constructs such as frequency use and intension to use e-learning in learning context.

Keywords: Collaborative Learning, Distance Learning, E-learning, learning process, impacts of E-learning, Tanzania Universities, Public Universities

1. INTRODUCTION

Information and Communication Technologies (ICTs) have influenced the landscape of education sector by changing the way various education activities are being conducted. Rapid developments of ICTs have improved access to and efficiency of teaching and learning processes in universities (Lwoga and Komba, 2015), thereby leading to improved students' achievements. This associated academic career achievement provides the promise for meaningful employment of graduates as well as movement towards a knowledge-based economy and rapid national economic growth (Olson et al., 2011). Based on this reason, most governments and universities in developed countries have invested in ICTs, e-learning systems in particular. As such, electronic learning systems (e-learning systems) have become a major phenomenon in recent years (Tossy, 2012) as transforms teacher-centered teaching and learning system into a student-centered one (Truncano, 2005). Further, this transformation enables students to develop their problem-solving abilities; information reasoning and communication skills; improves creativity and other higher orderly-thinking skills (Rosenblit et al., 2005). The system indeed changes the way in which teaching, learning, and administration of education activities are conducted (Tossy, 2012; Lwoga and Komba, 2015); offers efficient use of time and ease sharing of educational materials between students and staff (Shivaraji et al., 2013) and improves the quality of teaching and learning (Kahiigi et al., 2008; Jones, 2011).

Despite these notable attributes of utilization of e-learning in teaching and learning, its impact on student's achievements remain difficult to measure and open to debate as there are few conclusive statements (Truncano, 2005; Rosenblit and Gros, 2011). Others further argue that there is a contradiction on the conclusion on the impacts of e-learning systems on student's achievement (Hilz et al., 2001; Trancore, 2005). It is also argued that data to support the perceived benefits from e-learning technologies are limited and evidence of effective impact is elusive (Eurydice, 2011; Bocconi et al., 2013; Pandolfini, 2016). In developing countries, there is paucity of information about the relationship between e-learning technologies and student's achievement (Rosenblit et al., 2011). There is thus a need to carry out more research, notably to develop useful indicators and methodologies that need to be used in measuring the impact of e-learning in teaching and learning in developing countries including Tanzania in order to guide policy formulation. This is important because developing countries including Tanzania are still at very basic stage of e-learning technology adoption. Tanzania needs to tap into experiences of universities in developed countries that have long experience of using e-learning so as to formulate innovative corrective measures.

2. E-LEARNING

Wentling et al. (2000:5) define e-learning as:

““The acquisition and use of knowledge distributed and facilitated primarily by electronic means. This form of learning currently depends on networks and computers but will likely evolve into systems consisting of a variety of channels (e.g. Wireless, satellite), and technologies (e.g. Cellular phones, etc.) as they are developed and adopted. E-learning can take the form of courses as well as modules and smaller learning objects. E-learning may incorporate synchronous or asynchronous access and may be distributed geographically with varied limits of time.” (Wentling et al., 2000:5).

E-learning captures a wide range of terms [Albert & Mori, 2001] referred to as ‘labels’ which have been used to describe the concept of e-learning. These labels include, but are not limited to Web Based Learning (WBL), Web Based Instruction (WBI), Web Based Training (WBT), Internet Based Training (IBT), Online Resource Based Learning (ORBL), Advanced Distributed Learning (ADL), Tele-Learning (T-L), Computer-Supported Collaborative Learning (CSCL), Mobile Learning (M-learning or ML), Nomadic Learning, Off-Site Learning [Collis, 1996; Khana, 2005; Yieke, 2005; Bates, 2001; Dam, 2004; Goodear et al., 2001; Pegler & Littlejohn, 2007; Dabbagh et al., 2000; Barbara, 2002, 2004; Cramer et al., 2000; Salzbert & Polyson, 1995; Schreiber, et al., 1998; Schank, 2001; Howard, 2003; and Singh, 2003]. The e-learning term is used interchangeably with other related terms such as online learning, virtual learning, and web-based learning (Twaakyondo, 2004).

While The use of e-learning has the added value of flexibility (“anywhere, anytime, anyplace”), E-learning facilitates both learner engagement and the engaging of experiences (Uys, 2004; Meyen, 2000; 2002). Meyen (2002) demonstrate how e-learning helps to overcome the traditional barriers to education delivery. These barriers include lack of physical infrastructure, lack of qualified teaching staff, absence of adequate education budgets, and the failure of traditional pedagogy and curricula. East African countries are characterised by these barriers (Ndume et al, 2008). The failure of the government's efforts in building physical classrooms has created an opportunity for innovative education delivery via e-learning (Yieke, 2005). As Alavi and Leidner (2001) argues that e-learning’s importance will grow right across the educational spectrum from primary to HEIs, the e-learning implementation in Tanzania HEIs is taking place despite the various outlined barriers. The e-learning implementation differs from one HEI to another.

3. TANZANIA HIGHER EDUCATION STATUS

According to TCU (2010), the education sector in Tanzania has grown drastically for the past fifty (50) years; this has been due to an increase in the number of Higher Education Institutions (HEIs). The students’ enrolment has increased tremendously since independency. As MoEVT (2011) states that the number of students enrolled in HEIs increased drastically. In 1961, Tanzania had 1,737 students enrolled in 4 HEIs, while in 2011 a total of 244,045 students in 358 HEIs (MoEVT, 2011). This emanated from free markets which encourages establishment of both private and public HEIs, backed by various government policies on education sector such as Vision 2025, ICT Policy and Higher Education Master Plan (HEMP), which enhance the establishment of both private and public HEIs (Maliyamkono, 2006:396-445). Despite the fact that the number of HEIs has increased since 1961, the pace of increase of students compared to overall national population growth doesn’t match the enrolment offered by these institutions (Maliyamkono, 2006). This is due to limitation on enrolment capacity, geographical constraints, cost of education, lack of enough infrastructures, lack of qualified personnel and lack of innovative ideas (Chiemelie, 2012). In the light of those challenges, e-learning is sought to be the ultimate solution in which the enrolment does neither depend on the infrastructure nor geographical locations (Noe, 2005). As MoEVT (2011) argues that the HEIs should deploy e-learning for their day to day training activities, in order to minimize training cost and to remain competitive in the market. Furthermore, while MoCT(2003) articulates the need for harnessing ICT opportunities to meet the vision 2025 goals by blending strategic ICT leadership; ICT infrastructure; ICT Industry through Human Capital, MoEVT (2007) stipulates that Tanzania needs national e-learning sensitization by stressing the effort on applications such as distance education, e-learning, m-learning and blended learning.

4. E-LEARNING AT HEIS IN TANZANIA

Dr. Gajaraj Dhanarajan (2001:9), President of the Commonwealth of Learning, argued that:

“One would be foolish to question the importance of the internet and www for education in this new decade; at worst it has the ability to connect communities of learners and teachers and at its best it could very well be the

tool that education has been waiting for these past thousands of years; its promise is only limited by the imagination and capacity of the people who can apply and benefit from it”.

This kind of vision of a future electronically driven and inclusive education has been a driving force for HEIs in Tanzania and has provided the spur to implement e-learning. As is the case with other African countries, the rate of implementation of e-learning platforms in Tanzania is still very slow despite the potential opportunities provided by open source technology and the conducive environments created by the respective governments. There have been some initiatives on the part of governments to develop ICT policies as a way forward in the implementation of e-learning. In addition there have been different round table conferences and the formation of the Tanzania Commission of Universities (TCU) has fostered a debate on a common education delivery. For example, Tanzania has abolished all taxes related to computers and related equipment and reduced licence fees and royalties payable by the telecommunication operators (Morrison & Khan, 2003 and McPherson & Nunes, 2008). The more established public and private HEIs have managed to implement e-learning platforms in Tanzania. They are implementing these using either open source or customized platforms such as WEBCT, Blackboard, Moodle, Joomla, etc. Other universities in the Tanzania have started the basic process of ICT infrastructure expansion to include local area network implementation, Internet, computer labs and other facilities, as a way forward to the establishment of e-learning (Sife, et al., 2007).

5. E-LEARNING MARKET AND THE DRIVERS OF CHANGE IN TANZANIA

While e-learning is not a new phenomenon in the developed world, it may be new to some developing countries. Its market is rapidly increasing globally. While Merrill Lynch (2003) argues that the e-learning is the fastest growing sector in the developed countries, Many developing countries (including Tanzania) are striving to implement e-learning in HEIs. Doughty et al. (2001) and Saint (1999) have documented the rise of the virtual university in Africa (including Tanzania). There are many e-learning initiatives in progress in Tanzania, such as Schoolnet, e-learning centres, and African Virtual University (Ndume, et al., 2008; Sife et al., 2007). The increase in the demand for higher education is one of the driving forces for implementing e-learning. Higher population growth, lower education costs, increased access to education, and higher participation rates in higher education changes the way firms organize work and cost-effectiveness and are factors driving the implementing of e-learning in Tanzania (Ndume et al., 2008).

6. METHODOLOGY

Conceptual Model and Research Hypothesis Development

The research model for this study was formulated based on the concept of information system (IS) success model adapted from DeLone and McLean (1992). The model is consists of three dimensions each consists three constructs as illustrated in Figure 1. This paper therefore uses this conceptual model to underpin the measurement of the impact of e-learning system on student’s achievement in Tanzania universities.

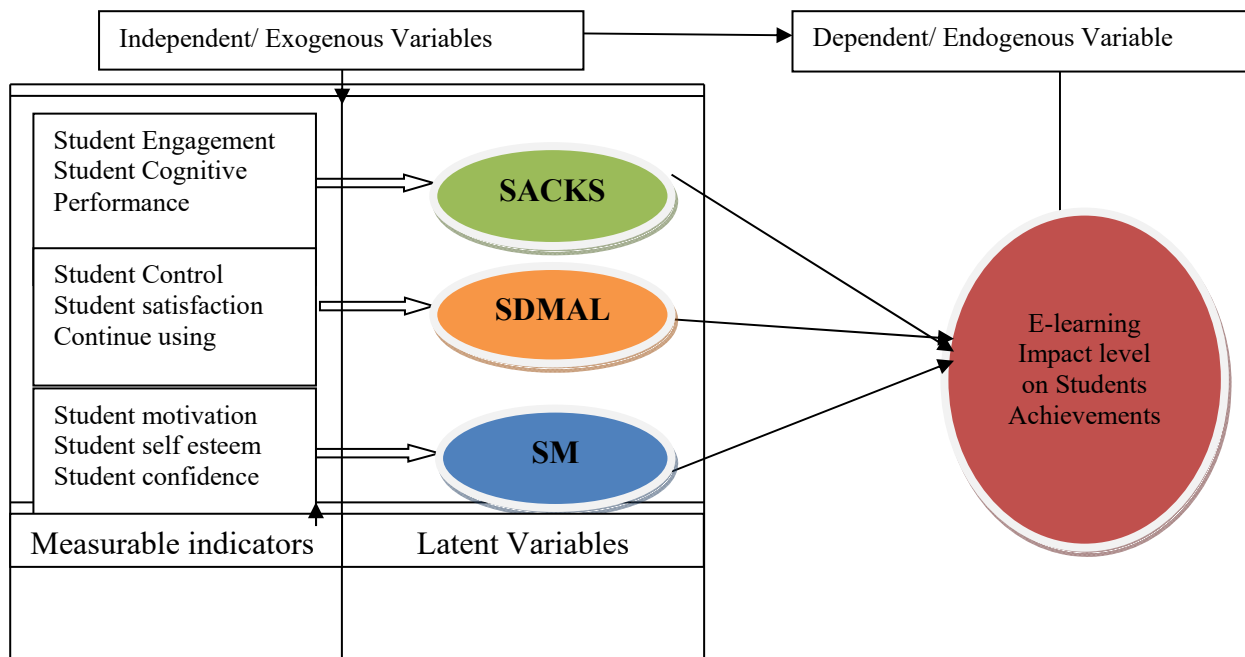


Figure 1: Conceptual Model Adapted from (DeLone and McLean, 1992)

Based on the conceptual model depicted in Figure 1, the following hypotheses were proposed:

Students' acquisition of knowledge and skills (SACKS)

- H1. Students' engagement on using the system has a significant positive relationship with their achievements
- H2. Students' performance expectancy has a significant positive relationship with students' achievement
- H3. Cognitive learning using e-learning system has a significant positive relationship with students' achievement

Students' development maturity as autonomous learner (SDMAL)

- H4. Students control on using e-learning system has positive relationship with students' achievement
- H5. Students continue using e-learning system has positive relationship with students' achievement
- H6. Students' satisfaction on e-learning system has positive relationship with students' achievement

Students Motivation (SM)

- H7. Student's motivation on using e-learning system has positive relationship with students' achievement
- H8. Students self esteemed on e-learning system has positive relationship with students achievement
- H9. Students' confidence on e-learning system has positive relationship with students' achievement

The study used a survey design, involving 4 universities with long ICT experience. These were thus purposively selected amongst 30 universities in Tanzania. Three hundred and fifty (350) respondents used in this study, thereby 306 respondents equal to 87.5% representing the planned respondent pool. The survey questionnaire consisted of five point Likert scales (Likert, 1932) was employed. The in-depth interview was employed to collect qualitative data from ICT experts during model validation. The data was then analyzed quantitatively and qualitatively respectively to identify different indicators and aspects relating to the measure of the impact of using and not using e-learning systems on students' achievements. The empirical data were analyzed using multiple regressions and structural equation modeling (SEM) using Statistical Package for Social Science (SPSS). The multiple regressions were used in analyzing hypothesized relationships conceptualized in the research model. In order to validate the model, the Delphi Technique was employed (Harold and Murray, 1975) and a new model was developed accordingly (Rowe and Wright, 1999).

7. RESULTS AND DISCUSSION

7.1 E-Learning Experience and Awareness

The study revealed that 75% of the respondents were exposed to e-learning systems based on whether one had ever used it for learning; attended a course on e-learning (9.5%); heard about it from a colleague of other institutions or seen a colleague using it (2%). It was further evident that 79% of students were aware of the use of e-learning frequently in their day-to-day learning activities, while 65% were found to have intention of using e-learning methods in their academic career. These results match with those of previous studies by Alexander (2008) and Mazman and Usluel (2009) which found that the more a person is involved in Internet or Web activities, the more they are likely to use e-learning. It is therefore more likely that, in developing countries particularly Tanzania, use rate of e-learning methods is likely to increase if university can afford to embrace them in institutional operations.

7.2 Indicators of the impact of e-learning

The results of the multiple regressions are shown in Tables 1, 2 and 3.

Table 1: SACKS indicators of Students' achievements

Students Achievement (Measure)	Indicators	β	t-value	Significance	Tolerance	VIP	R ²
SACKS	(Constant)	.412	2.304	.012			.513
	SE	.268	.886	.271	.926	1.079	
	SC	.618	7.854	.000	.641	1.560	
	PE	.596	7.617	.000	.641	1.679	

The results in Table 1 show that indicators such as student's engagement (SE), student cognitive learning using e-learning methods (SC) and the performance expectance (PE) on e-learning had positive relationship with the student's achievement.

Table 2: SDMAL indicators of Students' achievements

Students Achievement (Measure)	Indicators	β	t-value	Significance	Tolerance	VIP	R ²
SDMAL	(Constant)	.412	2.304	.012			.684
	SCO	.191	.092	.244	.807	.931	
	SS	.730	8.181	.000	.641	1.560	
	CU	.592	6.211	.000	.641	1.559	

The results [Table 2] further show that indicators such as students' control on using e-learning (SCO), students' satisfaction (SS) and continued use of e-learning had positive relationship with the students achievement.

Table 3: SM indicators of Students' achievements

Students Achievement (Measure)	Indicators	β	t-value	Significance	Tolerance	VIP	R ²
SM	(Constant)	1.106	6.88	.000			.896
	SSE	.323	4.409	.000	.641	1.560	
	MT	.545	7.191	.000	.641	1.679	
	CON	-.069	.881	.257	.903	1.108	

Table 3 indicates that students' self-esteem on using e-learning (SSE) and student motivation (SS) had positive relationship with the students' achievement with the exception of students' confidence on using e-learning.

7.3 A model for measuring e-learning impact on student achievement

The previously hypotheses were tested using SEM. Of the nine relationships, eight were statistically significant (Table 4). These were student's engagement (SS) ($\beta = .268, p < .01$); performance expectance ($\beta = .596, p < .01$); student cognitive learning (SC) ($\beta = .618, p < .01$) control on using e-learning ($\beta = .191, p < .01$); continued use of methods ($\beta = .592, p < .01$); satisfactions ($\beta = .730, p < .01$); motivation ($\beta = .545, p < .01$); self-esteem ($\beta = .323, p < .01$) and confidence on e-learning ($\beta = -.069, p < .01$). Only student confidence on using e-learning in learning context was not supported.

Table 4: Summary of hypotheses tested

Hypotheses	Accepted/Rejected	$\beta, p < .01$
H1 Students' engagement on using the system has a significant positive relationship with their achievements	Accepted	.268
H2 Students' performance expectancy has a significant positive relationship with students' achievement	Accepted	.596
H3 Cognitive learning using e-learning system has a significant positive relationship with students' achievement	Accepted	.618
H4 H4. Students control on using e-learning system has positive relationship with students' achievement	Accepted	.191
H5 H5. Students continue using e-learning system has positive relationship with students' achievement	Accepted	.592
H6 Students' satisfaction on e-learning system has positive relationship with students' achievement	Accepted	.730
H7 Student's motivation on using e-learning system has positive relationship on students' achievement	Accepted	.545

H8	Students self esteemed on e-learning system has positive relationship students' achievement	Accepted	.323
H7	Students' confidence on e-learning system has positive relationship on students' achievement	Rejected	-.069

With the latent variables presented in the conceptual model, Structural Equation Modeling (SEM) approach (Bollen, 1998; Hoyle and Panter, 1995) was used to determine the cause-effect relationships among the latent variables with their indicators and the e-learning on students' achievement in education. Three regression models were developed and used to determine the value of dependent variables. The regression models were developed for Students' acquisition of knowledge and skills (SACKS); Students' development maturity as an autonomous learner (SDMAL) and Motivation (SM). SACKS indicators were student engagement (SE); cognitive capacity (SC) and Performance expectancy (PE). It was further apparent that SDMAL measurable indicators were student control (SCO); satisfaction (SS); continued use (CU) and the measurable indicators for SM were student motivation (MT); self-esteem (SSE) and confidence (CON).

Based on the findings, the initial regression models were as follows:

$$\text{SACKS} = 0.268\text{SE} + 0.596\text{PE} + 0.618\text{SC} \quad R^2 = 0.513 \dots\dots\dots (1)$$

$$\text{SDMAL} = 0.191\text{SCO} + 0.592\text{CU} + 0.730\text{SS} \quad R^2 = 0.684 \dots\dots\dots (2)$$

$$\text{SM} = 0.545\text{MT} + 0.323\text{SSE} - 0.069\text{CON} \quad R^2 = 0.896 \dots\dots\dots (3)$$

Where:

SE = Student Engagement: SC = Student Cognitive: PE = Performance expectancy

SCO = Student Control: SS = Student satisfaction: CU = Student Continue Using

CON = Confidence: MT = Student Motivation: SSE = Student Self Esteem

The entire model was found to have a significant fit for the study, as all the three regression models had $R^2 > = 0.5$ (Hoyle and Panter, 1995). All hypotheses from H1 up to H8 were found to have significant positive relationship with the student's achievement. However, on the hypothesis (H9), the study revealed that students' confidence on e-learning system had a negative relationship with students' achievement. However, this was contrary to the findings of the study conducted by Olson et al., (2011).

Further from the findings above, it is clear that, student engagement, student cognitive capacity, performance were the key indicators of the latent variable which is **students' acquisition of knowledge and skills (SACKS)** for one to realize how e-learning impacts on student teaching and learning achievement. In addition students' control, satisfaction and continued use of e-learning strategies were indicators of the latent variable, which is **Students' development maturity as an autonomous learner (SDMAL) which is known to have an influence** on student's teaching and learning achievements. The findings further show that self esteem and motivation were indicators of the latent variable which is **Students Motivation (SM)** that had positive significance on students' teaching and learning achievement. In exception the study shows that student's confidence on e-learning had a negative impact on student's achievement. These findings agree with those of Olson et al. (2011) and The McGraw Hill report (2011).

7.4 Model Validation

The model was validated using the Delphi Technique based on the assumptions that a group expert judgment is better than an individual judgment (Amiresmaili et al., 2011). Therefore, two different groups composed of panels of ICT experts were formed with the view to discuss and evaluate the model. The experts were technical personnel; lecturers specialized in e-learning and consultants of e-learning. All relevant determinant factors obtained from Section 2 were critically discussed by panelists and compared. The expert judgments arising were then used to test the validity of the model, which was then refined using inputs from the workshop. The model finally established was a function of Students' acquisition of knowledge and skills (SACKS), development maturity as an autonomous learner (SDMAL), Motivation (SM) and Behavioral Intension (BI) as latent variables, each with measurable variables as presented in section 3. This relation is depicted mathematically as follows:

$$\text{Measurement Model} = f(\text{SACKS, SDMAL, SM, BI}) + e$$

This further shows that the model had the potential to improve the measurement of e-learning impact on student's achievement in order for the management at an institutional level to make decision based on the impact. This is envisaged to help to realize the net benefit to justify the total investment.

8. CONCLUSION AND RECOMMENDATION

This study shows that developed model [Figure 2] has the potential to be used in measuring the impact of e-learning on students' achievements in universities and other institutions. Results obtained through a mixed research method approach revealed that Student Engagement (SE), Cognitive capacity (SC), Performance expectancy (PE), Control (SCO), Continued use (CU), satisfaction (SS), Confidence (CON), Motivation (MT), Self Esteem (SSE) are important measurable indicators of the model. In particular, intention to use (IU) and the Frequency of using (FU) e-learning are measurable variable from behavioral intension (BI) which are of particular importance in evaluating its impact on students' achievement. These are novel additions indicators to measure e-learning technology utilization impacts using the developed model. These results call for more research that focuses on evaluating the impact of e-learning systems on students' achievement in teaching and learning using the developed model in this study. The developed model as a result of this paper is important as it help policy makers, university managements and other stakeholder to measure the impact of e-learning in order to understand the status of e-learning for justifying the total investment in learning context.

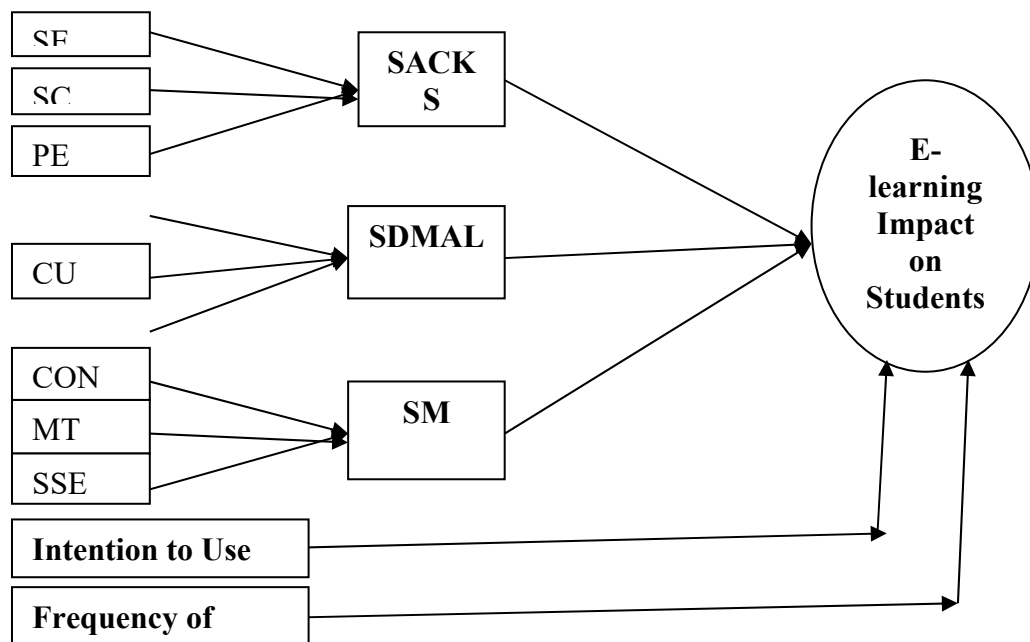


Figure 2: A final model for Measuring the Impact of e-learning on Students Achievement

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PEDAGOGICAL DESIGN OF INTERACTIVE ONLINE LECTURES: INSTRUCTIONAL INTERVENTION IN DISTANCE

Anneli Sarja

Finnish Institute for Educational Research, University of Jyväskylä

E-mail: anneli.sarja@jyu.fi

Marja Leena Böök

Department of Education, University of Jyväskylä

Sanna Uotinen

Open University, University of Jyväskylä

Tarja Ladonlahti

Open University, University of Jyväskylä

ABSTRACT

Interactive online lectures play an important role in distance education aiming at students' active participation and knowledge construction. This study deals with an instructional intervention involving a synchronous online lecture of qualitative research methods for undergraduates in a Finnish Open University course. The metaphor of orchestration offered the framework for teachers' pre-design and real-time activities with the aim of guiding students' cognitive engagement in online interaction. While the core themes of four lectures were kept constant, different activating tasks contributed to enhancing content-related interaction. The design of the orientation phase of the lecture varied along the continuum from the traditional teacher-centred approach to more generated authoritative approach where the teacher was working as a promoter of knowledge construction. In the last case, a triggering event (a research abstract) worked as an advance organiser to integrate conceptual knowledge with students' existing experiences. The interactivity of online lectures was enhanced by the content and order of the activating tasks. The content-related interaction multiplied throughout the course of the lectures in line with the linearity of the structure. The results suggest that the orienting phase of the lecture is crucial for students' cognitive engagement.

INTRODUCTION

In distance education settings, synchronous online lectures enable the transmission of knowledge to large numbers of students who can ask and answer questions in real time. The lecture-form of instruction, however, easily results in the acquisition metaphor of learning in which students play a passive role, and the transformation of knowledge or facilitation of their active participation seems to be challenging (Hager & Hodkinson, 2009; Laurillard, 2012). Learning through participation refers to a process of learning by taking part in a dialogue, maintaining social relations with others and utilising conceptual tools (Hrastinski, 2008b). Further, online research has drawn attention to the importance of student-teacher dialogues accompanying deep-level learning processes in distance education (Garrison, 2011; Falloon, 2011; Offir et al., 2008; York et al., 2007). Online lectures that lack social interaction coupled with a clear learning focus contribute to weak engagement with knowledge construction.

Current research has identified different approaches to university teaching showing the relationship between teachers' and students' perspectives towards learning (Entwistle et al., 2000; Prosser & Trigwell, 2014; Struyven et al., 2010). The structural design of university courses can be implemented in many ways. For instance, the traditional teacher-centred approach often supports the demonstration of discipline-based facts and skills with the intention of information transmission, whereas a teacher-generated approach favours the integration of concepts of the discipline with students' previous knowledge (Prosser & Trigwell, 2014; Struyven et al., 2010). Thus, interactive lectures can significantly promote the quality of content-related interaction and make a difference in student participation in general. For instance, Lonka and Ketonen (2012) underline the importance of understanding the cyclical nature of students' learning processes when the goal is to develop lecturing aiming at conceptual change and understanding. Currently, however, there are rather few studies on how interactive online lectures can be developed from an instructional design perspective (Laurillard, 2012).

The present study is a part of an intervention programme titled ‘Interactive Teaching and Learning’ implemented in a Finnish university with the aim of enhancing active student participation in various disciplines (Jääskelä et al., 2016). The programme has identified flexible approaches to the reformative development of university teaching. This article focuses on an intervention concerning four online lectures of qualitative research methods for undergraduates in distance education. The aim of the study is to compare how the orchestration of these synchronous lectures affects the nature of students’ content-related interaction. In the intervention, various activating tasks were used as tools of the pedagogical design.

ORCHESTRATION OF ONLINE LECTURES

In distance education, the structural design of online lectures has an impact on students’ participation and the quality of their interaction. Online researchers have offered various models of interaction that support the design of courses with the aim to achieve reflective and critical learning. The classical theory of transactional distance by Moore and Kearsley (1996) — defined as a function of dialogue (interaction) and the level of flexibility of the course structure (design) interaction being the crucial factor in distance education—has offered guidelines for later pedagogical designs. The community of inquiry framework by Garrison et al. (2000) integrates three overlapping basic elements: cognitive, social and teaching presence, cognitive presence being the first element of the model. Accordingly, Offir et al. (2008) stress that the online interaction level between the students and the teacher and among the students determines the effectiveness of the teaching method, seeing content-related interaction including surface (explanatory and expository) and deep-level learning processes (cognitive).

The metaphor of orchestration has been offered as a method to conduct teaching that encourages the enhancement of creative learning, that is, from the perspective of teacher improvisation. Although the goal of orchestration has been to support processes of collaborative learning, the concept also offers guidelines for the flexibility of teaching in the context of formal instruction. The main idea of orchestration is to combine the pre-design and real-time teacher activities in the classroom so that pedagogical improvisation refers to structuring and supporting students’ knowledge construction processes and social interaction (Dillenbourg & Jermann, 2010; Hämäläinen & Vähäsantanen, 2011).

In practice, the aim of orchestration is to increase the balance between the instructional support of the real-time activities as well as the contextual nature of learning processes (Hämäläinen & Laine, 2014). The concept integrates the structural design of the instruction with improvisation pertinent to the interactive process including three components: 1) task structures, 2) interactions and 3) resources. Different types of tasks foster different interactions. In particular, tasks that encourage students to consider alternative solutions and make choices based on evidence promote knowledge-construction processes. Further, orchestration is grounded by theoretical knowledge and related to interactions in which the teacher provides explanations and offers complementary information. Students’ previous experiences work as external and internal resources for interaction (Hämäläinen & Vähäsantanen, 2011; Hämäläinen et al., 2016).

A crucial question in online education is how to organise the thematic content knowledge to support students’ active participation. Although the metaphor of orchestration has meant teachers’ flexible activities to facilitate students’ deep learning processes (Hämäläinen et al., 2016), the concept, however, offers fairly broad guidelines for the pedagogical design of online lectures. Conversely, online researchers in distance education have distinguished extensive types of interactions that contribute to different kinds of online interaction. For instance, Moore and Kearsley (1996) presented three interaction types: between students and the content, between students and the teacher and among students. Similarly, in Garrison’s (2011) community of inquiry framework, an educational experience is related to the balance and interaction of cognitive, social and teaching presence, and the deep learning occurring through the interaction of these basic elements. In fact, lecture-based teaching favours cognitive presence, interaction between students and the content, while lectures are meant to support knowledge-construction processes and reflective thinking.

Garrison and Cleveland-Innes (2005) highlight that cognitively directed interaction is qualitative in nature. In their community of inquiry model grounded in experience, the cognitive presence is defined as the exploration, integration, and testing of concepts and solutions (Garrison, 2011). However, lecturing, unlike asynchronous collaborative learning processes, cannot be based on a dialogical or symmetrical relationship between the teacher and the student, due to the former’s authority. In a sense, the authority manifests itself in the ways by which the teacher designs (structures) the thematic content under study. Basically, however, dialogic pedagogy allows the teacher to work as an authoritative agent who is responsible for the mediation of certain theories, concepts, facts or phenomena (Matusov, 2009). Hence, Matusov (2011) suggests that the authoritative teaching discourse can be manifested as teacher-generated dialogic provocations to which students are asked to justify alternative responses. These provocations, such as an assertion, contrasting cases or statements, a triggering event and so on,

offer a common object of learning for students' active participation (Kuutti, 2005; Laurillard, 2012; Matusov, 2009). In a way, the common learning object works as an advance organiser of cognitive engagement, 'as a core organising concept or issue of the knowledge domain being studied' (Garrison, 2011, p. 46). According to Laurillard (2012, p. 109) 'the value of advance organisers is to enable the learner to compare and contrast the new ideas with what they already know (Ausubel, 1980)' and 'to focus on the internal logic of the conceptual structure being learned (Marton & Booth, 1997)'.

Importantly, online course design must be clearly structured and cohesive because the order of activities often determines the nature of cognitive engagement (Dillenbourg & Jermann, 2010). Research has pointed out that the critical dimension in online contexts is to design tasks that guide students towards deep-level knowledge-construction processes (Garrison, 2011; Ke & Xie, 2009; Ke, 2013; Offir et al., 2008). According to Offir et al. (2008), deep-level processing is cultivated through different kinds of questions because they enable students to estimate the extent of their mastery of the learned material and afford an opportunity to review the material. Both the teachers and students can ask these questions. Thematically relevant questions have proven essential in supporting student-focused teaching; the most important point is, however, what kind of interaction follows these questions (Skidmore, 2006). This paper explores, from a cognitive perspective, how the design of knowledge transmitting online lectures enhances content-related interaction in distance education. The flexibility of teachers' activities was compared in the core phases of the lecture course. Our specific research questions are as follows: a) What kinds of activating tasks enhance content-related interaction during the online lectures; b) How does the quality of content-related interaction change during the online lectures?

METHODS

Study context and participants

The research was based on an instructional intervention of online lecture and it was conducted at the Open University in Finland. In brief, the course titled Qualitative Research Methods in Education (5 ECTS) provides the undergraduate student with the basic skills required for educational research. The web-based learning environment Optima and video conference application Adobe Connect (AC) were used in this course. AC enabled online lectures, where teachers' voices, faces (video) and PowerPoint presentation slides were shared with the students participating via chat discussion.

The qualitative research methods course consisted of five different parts: 1) the nature of qualitative research, 2) gathering data, 3) analysing data, 4) the evaluation of reliability and ethical questions, and 5) reporting the research. The online lecture 'Evaluation of Reliability and Ethical Questions' was chosen as the target of intervention. The lecture was deviated from the other parts in that it was implemented as a co-teaching experiment. The pedagogical design of this lecture proceeded as an iterative process orchestrated by the research team consisting of two researchers and two lecturers. The basic content (themes) of the lecture did not change, but it was revised with different activating tasks based on the joint evaluation of previous online lectures.

The same lecture was implemented four times with a new group of students participating in each round; with the enrolment ranging from 21 to 38 students per round. Their educational background varied from university to upper secondary degrees. The age range was from 21 to 63 years, and most of the students were females. For research ethical reasons, the students were asked for their informed consent before each occasion (Patton, 2015) so that the recorded online lectures and chat discussions could be used as research data. In addition, the anonymity of the participants was guaranteed. Each online lecture lasted about two hours (Table 1).

Table 1. Description of the online lectures: duration and participants

	Online lecture I	Online lecture II	Online lecture III	Online lecture IV
Date	17.11.2011	15.5.2012	13.11.2012	15.5.2013
Length	121 min	119 min	117 min	118 min
Number of students	32	21	38	33
Gender: female	26	20	30	31
Gender: male	6	1	8	2

Data collection and analysis

The main data consisted of online lecture recordings (8 hours, 27 pages), students' messages in chat discussion forum (50 pages) and teachers' feedback. The transcribed data were analysed qualitatively by identifying different interaction during the component themes of the lectures. The unit of the analysis was a message and/or a chain of messages. The core meanings of the chat messages were classified according to the theme, addressee and function (Patton, 2015). Chat discussions were coded openly, grouping similar ones into the same category.

However, based on the classification of different messages only the student content-related interaction was chosen for the analysis.

At first, the analysis proceeded inductively: no theory was directing the analysis but the classifications emerged from the collected data. After identifying and outlining the main categories, previous studies (Garrison & Cleveland-Innes, 2005; Moore & Kearsley, 1996; Offir et al., 2008) were used in naming the phases of content-related interaction (Patton, 2015). The research team read the data separately and then constructed a common classification from the separate codings. In line with confidence criteria, the analysis progressed through steps of re-reading the transcripts, identifying different components and connections across them and observing how the data related to the theoretical framing of the study. Using analyst triangulation (Patton, 2015), it was possible to compare the findings and discuss unclear cases. In all, there were no great differences between the categorisations, but team discussions were important when deciding on the final classification.

The instructional intervention was grounded in enhancing the sequentiality of the phases of the lecture (Dillenbourg & Jermann, 2010). The students were given various activating tasks with reference to the core themes of the lecture either before or after the concepts were defined by the teachers. Thus, the instructional intervention formed a continuum from deductive approach to inductive approach. The design of the first online lecture was based on the traditional chalk and talk method with three activating tasks to bring some change for the students. During the second and third lectures the students' previous understanding and research experiences were mapped and the amount of activating tasks was increased. The final lecture was designed to follow the principles of guided participation. The triggering research example was offered to orient the students to integrate their knowledge through this common object of learning.

Learning tasks are often classified according to the type of information required, ranging from lowest level of factual recall questions up to highest level of evaluative questions that refer to judgment, evaluation and choice. Various questions focus the students' attention on reviewing the knowledge structure and its context. (Offir et al., 2008.) In this study the activating tasks were meant to support the assessment of the themes of the lecture and tasks were either reflective or evaluative; most were open-ended (tasks 1, 2, 4, 6, 7, and 8), and two were multiple-choice (task 3 and 5). The multiple-choice tasks were based on polling, an activity that has been shown to increase student involvement (Cairncross & Mannion, 2001 cited in Stephens & Mottet, 2008). Task-specific contents are summarised in Table 2.

Table 2. The content of the tasks

TASK 1. Students discuss (on chat) about which factors weakened the reliability of the research conducted during the course.	Open-ended, reflective
TASK 2. Students discuss (on chat) about which factors strengthened the reliability of the research conducted during the course.	Open-ended, reflective
TASK 3. Students choose which out of the five alternatives most infringes the principles of ethical research. Discussion on the results.	Multiple choice: five alternatives (choose one)
TASK 4. Students discuss (on chat) about which factors will strengthen the reliability of qualitative research.	Open-ended, reflective
TASK 5. Students choose which two alternatives (out of two sets of four) most weakened the reliability of the research conducted during the course. Discussion on the results	Multiple choice: Four alternatives 1 (choose one) Four alternatives 2 (choose one)
TASK 6. Students discuss (on chat) about which reliability issues they will absolutely have to take into account in their bachelor's thesis, to be written in the near future.	Open-ended, reflective
TASK 7. Students read an abstract of a doctoral thesis. They discuss (on chat) about what kind of ethical or reliability issues the doctoral thesis could involve. Discussion.	Open-ended, evaluative
TASK 8. Students answer (on chat) the following questions: What did you learn? What can we do better? Where did we succeed? Was there anything missing?	Open-ended, evaluative

The intention of the tasks (Table 2) was to generate content-related interaction followed by student-teacher, and student-student dialogues during the online lectures. In the analysis of the quality of interaction, attention was paid to the deepening and broadening of the content theme by the students (Laurillard, 2012; Wegerif & Mansour, 2010).

Instructional intervention: pedagogical design of activating tasks

The pedagogical design (i.e. structure) of the online lectures (such as phases, timing and duration of tasks), their length and the roles of two teachers were designed beforehand. The number and timing of tasks varied across the lectures, and each online lecture was launched differently. As the intervention proceeded, certain revisions were made after each lecture. The sequences in Figure 1 show how the same tasks were located in the course of the lectures and how the number of tasks varied from one lecture to another. Synchronous communication has been found to support student participation especially at the beginning (warm-up) and at end (feedback) stages of online sessions (Hrastinski, 2008a). In the initial phase and during the lecture, a sense of community was promoted through encourage interaction including social and procedural messages (Offir et al., 2008). First, the teachers introduced the lecture outline and themselves. Teachers’ encourage interaction included behavioural messages like calling the students by their first names, giving affective feedback or describing procedural instructions. As for further social interaction, also the students’ peer-related informal messages (greetings, thanks, exits etc.) were found to be an evidence of the sense of community. The design of the online lectures is illustrated as four sequences in Figure 1.

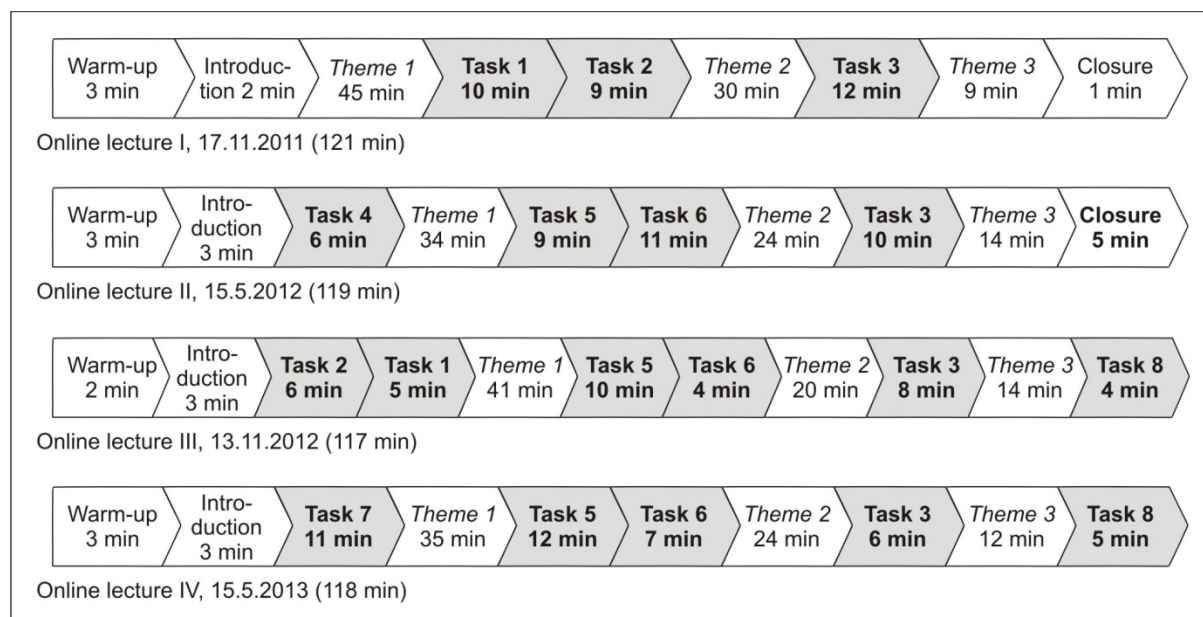


Figure 1. Activating tasks and the structural design of online lectures

The online lecture on the *Evaluation of Reliability and Ethical Questions* was designed so that it consisted of three main themes: 1) The fields and criteria of reliability in qualitative research, 2) The researcher’s perspective on ethical choices, and 3) Practical hints concerning informed consent. The first theme was designed as a foundation for further elaboration on the students’ previous experiences in conducting research, while the second theme aimed to demonstrate the choices made by professionals in various situations of qualitative research. The third theme dealt with instructions for informed consent. The thematic structure of the online lectures remained stable over the course of the intervention. Between the online lectures I and II, the total number of tasks rose from 3 to 4 with the introduction of Tasks 5 and 6, while two previously converging items (T1 and T2) were combined into Task 4. In lecture III the Tasks 1 and 2 were used again, but their order was changed. Finally, in the fourth online lecture, a new evaluative task (T7) was introduced. While the number of tasks diminished, this allowed more time for their elaboration. In addition, at the end of the last two lectures the students were asked to evaluate the lecture (T8).

RESULTS

In this chapter, the nature of content-related interaction is discussed to determine how the orchestration of four online lectures contributed to students' participation in chat discussion forum. Students' content-related interaction was designed around the order of activating tasks. First, the connection between various tasks contributing to student participation is briefly described, after which the quality of content-related interaction is compared in three phases of online lectures.

Student participation

Students' participation was assessed by specifying the number of their content messages in the phases of online lectures (OLs). Here, the students' content messages directly concerned the assigned tasks. In Table 3, the number of content-related messages is given to describe the effect of each task. The abbreviations OL I, OL II, OL III and OL IV refer to the different online lectures; TE1 and TE2 refer to teacher 1 and teacher 2 and ST refers to the student when quoting from the data.

Table 3. Quantity of student content messages according to the tasks in online lectures (OL)

Tasks	OL I	OL II	OL III	OL IV
Task 1	29	-	24	-
Task 2	27	-	39	-
Task 3	33	23	47	44
Task 4	-	23	-	-
Task 5	-	3	10	18
Task 6	-	24	43	72
Task 7	-	-	-	79
Task 8	-	-	(35) ¹	(34) ¹
Total	89	73	163	213

Note: The evaluation of the online lectures (T8) is not included in the total number of content messages

Overall, students' participation more than doubled from OL I to OL IV (from 89 to 213). Most of the chat discussion took place during the tasks, but the peer-related talk continued during lecturing as well, especially during OL IV. In such cases, the students' messages were included in the number of the preceding lecture theme. There were no significant differences in the amount of content-related interaction for OL I and OL II, keeping in mind that OL II had fewer students. By contrast, during OL III student participation doubled and was at its highest in OL IV. In line with earlier research (Ke & Xie, 2009; Offir et al., 2008), the evaluative task (T7) launched joint knowledge constructive interactions in all phases of the lecture, while reflective tasks seemed to promote surface-level processing (cf. Offir et al., 2008). In the next chapter, the quality of content-related interaction is explored, and authentic excerpts illustrate the nature of participation during the lectures.

Content-related interaction

In the online and classroom contexts, researchers have separated various phases of teaching activities (see Garrison, 2011; Matusov, 2009; Sidorkin, 1999). In this study, three interconnected phases were distinguished: the orientation phase, the knowledge construction phase and the conclusion phase. The orientation phase is meaningful from the viewpoint of cognitive engagement because it evokes the motivation for the forthcoming thematic content.

The orientation phase was launched slightly differently in each lecture. In OL I, the concept of reliability was initially defined by the teachers, after which students' understanding was mapped in the light of their practice research (T1 and T2). This kind of *authoritarian-oriented* approach favours student activity with the intention of theory-based knowledge integration (Prosser & Trigwell, 2013). All the other online lectures were launched more directly with student activities. In OL II, a proactive question (T4) was used to help the students to discuss the general reliability issues in qualitative research. The assumption was that this kind of approach may favour the *developmental* reflection on the forthcoming conceptual knowledge (Prosser & Trigwell, 2013). Closely related, in OL III, the students' previous understanding (T2 and T1) was again utilised with the intention of *facilitating* their participation. Finally, in OL IV, a research abstract (T7) was defined by the teachers as a common object of learning. Here, the teachers worked more as *authoritative* agents with the aim of getting the students to justify some critical features of the qualitative research (Matusov, 2009). Noteworthy, the authoritarian teaching approach favours the knowledge content to be delivered so that the teacher has authority over that which is to be learned. The authoritative teaching approach favours dialogue, a tension in the relation between authority and liberty (Matusov, 2009, p. 94, p.107). In Table 4, students' content-related interaction is defined and illustrated with examples of their chat messages during each lecture.

Table 4: The orientation phase of online lectures I – IV

<i>Task structure</i>	<i>Students' content-related interaction</i>	<i>Teacher as the conductor</i>
Online lecture I (Theme + Tasks 1 & 2)	Discussion about the practice research Naming the reliability criteria of practice research in relation to data collection, analysis and reporting: . <i>too many interviewers and research situations made accurate reporting nearly impossible;</i> . <i>difficult to analyse interviewees' short answers;</i> . <i>the common framework of interviews was good;</i> . <i>the questions were common and clear, so even saturation was distinguished in some questions</i>	Authoritarian Favouring theory-based knowledge integration with previous experiences
Online lecture II (Task 4 + Theme)	Discussion about reliability issues Predicting the reliability of qualitative research: . <i>following the practices of the science community;</i> . <i>open and accurate reporting of research phases;</i> . <i>clear description of the data collection process;</i> . <i>the decisions must be validated and clearly expressed;</i> . <i>the choice and application of a good analysis method</i>	Developmental Promoting cognitive engagement with content knowledge
Online lecture III (Tasks 2 & 1 + Theme)	Discussion about the practice research Naming single issues related to data collection: . <i>many researchers and common questions;</i> . <i>there were the same kinds of answers = saturation;</i> . <i>the interviewees were friends, which may have predicted their answers;</i> . <i>the transcription may not have accurate in all interviews;</i> . <i>leading interview questions/comments</i>	Facilitative Utilising students' experiences of their practice research
Online lecture IV (Task 7 + Theme)	Discussion about the abstract of a doctoral thesis Proposing judgments based on reliability issues: <i>The concepts and their meanings used by children of different ages can deviate from interpretations the researcher has made.</i> Proposing judgments based on the ethical issues: <i>Questions concerning children's right to privacy. Are they all involved voluntarily?</i> Assessing the data collection method: <i>How did they motivate the children to make drawings, or were these spontaneous paintings?</i> Examining the example in a wider framework: <i>Are the findings dependent on the context?</i> Judgment supported by justifications: <i>How did the mother participate in the research?</i> <i>Both are mentioned in the title but in the abstract only the children are mentioned?</i>	Authoritative Constructing an advance organiser as a common object of learning

In the orientation phase of lectures I, II and III, the students' content-related messages consisted of short lists of reliability issues related to the weaknesses and strengths of their practice research, details of the interview process and their own role as novice researchers. The transformations made by the researchers during the intervention did not significantly affect the quality of students' content-related interaction, with the exception of OL II, where the common reliability criteria of qualitative research were concerned. Contrary, in OL IV students' active participation was realised in the quality of their content-related interaction, which was mostly presented as critical comments integrated with the given research example. Here, the choices made by the professional researcher were evaluated by the students in the light of their previous understanding. As an expression of deep-level knowledge construction, the students proposed critical judgments based on reliability issues; they examined the research abstract in its wider context and presented judgments supported by justifications. The advance organiser helped the students to consider both concepts (reliability and ethicality) of the lecture and to focus on the salient features of the concepts from the point of real research practice. The peer-related interaction continued in the chat discussion forum during the lecturing. Here, the triggering example

worked as an external object that opened up creative dialogic space to deepen the degree of reflection (Wegerif & Mansour, 2010) so that the students were able to evaluate the critical features of the qualitative research.

The limited schedule of the online lecture affected the pedagogical design of activating tasks. In the orientation phase, the tasks were meant to motivate the students to the forthcoming themes; thus, the teachers had not reserved much time to deepen the content-related interaction. For this reason, they briefly collected students' comments, like *You discuss your own role and your experience related to data collection. We highlighted the same issues in the lecture; Diverse comments – many on data collection*, or explained knowledge in response to students' questions, such as *The common framework determines the dependability of the situation*. In this phase, the teachers also used encourage interaction, that is, concluding comments or social feedback, like *Somebody nicely brought out the meaning of background data; Very good observations – some of the same as earlier factors; Really good points related to ethical questions*.

The knowledge-construction phase. Starting from OL II, two interlinked activating tasks (Table 2, T5 and T6,) were offered to deepen the content-related interaction. There were no differences in the quality of student interaction during the OL II and III; therefore, their analysis is combined (Table 5). In this phase the teacher worked either in the role of *facilitator* supporting the students' repeating comments on the weaknesses of their previous research or as an *interactive partner* improvising the real-time activities when offering complementary information and explanations for the questions students posed. In other words, new knowledge was constructed and integrated in joint interaction through student-content, student-teacher and student-student dialogues.

Table 5: The knowledge-construction phase of online lectures II – IV

<i>Task structure</i>	<i>Students' content-related interaction</i>	<i>Teacher as the conductor</i>
Online lectures II & III (Tasks 5 & 6)	<p>The factors that weakened the reliability of the research conducted during the course Repeating the same issues as in the orientation phase: <i>simple, very specific research tasks and too many researchers; All are weak factors until they have been reported closely enough.</i></p> <p>Proposing the reliability issues the students will take into account in their forthcoming bachelor's thesis The issues related to the researcher or data collection: <i>the research journal helps reflection as a researcher; the meaning of your own preconceptions; the strong theoretical background; the testing of the questionnaire; the understanding of the interviewee; transferability</i></p>	Facilitative Students' experiences of their practice research as a resource of their reflection
Online lecture IV (Task 5)	<p>The factors that weakened the reliability of the research conducted during the course Interaction about the conceptual themes of the lecture: <i>ST1: It was difficult to interview a friend— that's why we should discuss and work together on our concepts etc.</i> <i>ST2: How much does it affect the reliability that the researcher does not have any experience as an interviewer?</i> <i>TE2: This concerns the transparency with which we spoke in the lecture. This question you can reflect upon in the report.</i> <i>TE1: I remember when I wrote my doctoral thesis and interviewed the parent. I was quite inflexible as a researcher regarding those first interviews.</i></p>	Interactive Content-related interaction and joint knowledge construction

In OL II and III, the students' content-related interaction concerned many of the same issues as in the orienting phase. They mainly reflected their personal research skills and the common interview outline and took up some single reliability issues they found important for their forthcoming research. The teachers' interaction concerned direct instruction when they picked up some individual comments and linked them with the concept of reliability, such as *You have largely the same kind of comments as in the opening phase of the lecture; It seems that most students are critical towards their own interview outline; Somebody brought out that the interviews were quite narrow. You can consider the richness of the collected data in terms of credibility etc.* As a result, the chat discussion was directed to the revision of the previous thematic content of the lecture and did not progress into deep level-oriented interaction.

Compared with the previous lectures, the amount of content-related interaction notably increased during OL IV. However, merely a large number of messages does not guarantee real commitment to desired knowledge-construction processes. Here, the anchored object of learning, as constructed in the orienting phase of OL IV, provided a basis for pedagogical improvisation in the form of different types of dialogues. Students asked for conceptual clarification for the problems experienced during the practice research (Table 5). In this phase of exploration, the students searched for relevant information and possible explanations for the problems they may encounter in their future research (Garrison 2011, p. 46). Knowledge integration was to be seen as several student-teacher, student-content, student-student and teacher-teacher dialogues (see Table 6).

Table 6: The knowledge-integration phase of online lecture IV

<i>Task structure</i>	<i>Students' content-related interaction</i>	<i>The types of dialogues</i>
Online lecture IV (Task 6)	<p>Proposing the issues of reliability and ethicality to be taken into action in future research</p> <p>Presenting questions about the content of the lecture <i>ST1: Must the reliability of qualitative research be measured through saturation?</i> <i>TE2: I wouldn't say it quite like this. Saturation is related to the criterion of correspondence!</i></p> <p>Asking for clarification from the teacher: <i>ST2 (name) This was confusing in the data analysis: the same person first answered and then in the next sentence totally cancelled his answer.</i> <i>TE1: (name) In that case, you should define during the interview what the interviewee means.</i> <i>ST2: Really, but we had those data in which everybody carried out their own transcription.</i> <i>ST2: T1 (name) what about when the interviewee has answered that she 'should do one thing and another'. Is it then possible to interpret it so that it has not happened?</i> <i>ST3: (name) Would the interviewer be able to answer, for instance to say something about the tone of voice of the interviewee?</i></p> <p>Handling the criteria of ethicality in a wider context: <i>ST1: The researcher must report impartially on the research subjects, but then the research cannot hurt them. What about when you do research in a foreign culture and there is some tradition that is not accepted or in agreement with norm in another culture? This is a difficult ethical question that I want to ask.</i> <i>ST2: I have the same problem: How to you apply these criteria without breaking the cultural norms and habits?</i> <i>ST3: The distortion of the facts: if it is not possible tell otherwise except when it is shared by the interviewee.</i> <i>ST1: Could I have the teachers' perceptions on my earlier question at the same stage?</i> <i>TE1: (name) the researcher must report the results honestly, but of course you can write about this issue in many ways: you can also share in the report what is allowed in the culture etc.</i> <i>ST2: Earlier, I posed a question.</i></p> <p>Knowledge integration (practice-theory gap): <i>ST5: As far as I know, it is not good to mix the features of qualitative and quantitative research.</i> <i>ST6: In my master thesis, it worked.</i> <i>ST7: This is exactly the triangulation method!</i> <i>ST8: Triangulation is always preferable if it gives more information about the content.</i></p>	<p>Student-teacher dialogue</p> <p>Student-teacher dialogue</p> <p>Student-teacher-student dialogue</p> <p>Student-student dialogue</p>

The final online lecture evoked different types of dialogues between the students and the teachers and among the students. In support of the evidence of deep-level processing were the questions concerning the meaning of certain concepts, the joint reflections on the critical features of practice research, judging the questions of ethicality in contrasting cultural contexts and the integration of the theoretical knowledge with practice. It is generally agreed upon that the level of interaction defines whether the lecture is dialogue- or monologue-oriented (Matusov, 2009). The many authentic questions students posed concerning the alternative choices of a researcher promoted deeper content-related interaction with knowledge-integration processes. Further, as evidence of a reduced transactional distance, the students repeatedly asked for further information from the teachers. Due to the large number of messages on the chat discussion forum, the teachers were not able to respond to all of them.

When requested, the teachers commented on the chat discussion, both by making visible the gap between practice and theory and by providing direct instruction, complementary information and explanations, such as *TE2: About this question that you ST9 asked; I didn't quite catch your meaning ... TE1: Connected to this, I will give you an example. In my graduate group, there was a student who was ... TE2: I have had a similar case, too.* The students' questions in the chat discussion forum also evoked teacher-teacher dialogues when they delivered their own experiences as researchers, like *TE2: The lack of this kind of interview training can also diversify the way of working, or what do you think? TE1: The lack of a theoretical framework surely relates to the practice research and affects reliability.* This finding is consistent with the earlier research in that the students' content-related inquiry must be scaffold by different types of dialogues (Garrison & Cleveland-Innes, 2005; Moore, 2013).

Conclusion phase. The final multiple-choice task (Table 2, T3) was the same for all the online lectures. The students were asked to choose one of the five alternatives they found violating the principles of ethical research. The choice seemed difficult, and many specific questions were asked concerning either the exact meaning of the concepts addressed earlier in the lecture or issues with regard to their forthcoming bachelor's theses. Again, the limited schedule of the lectures prevented the deepening of the content-related interaction in this final phase. Overall, at the end of the last two lectures, the participating students were asked to give feedback on the effectiveness of the pedagogical design. Most found that the activating tasks both helped them to engage with the content themes and deepened their understanding of the concepts, as their feedback indicates: *You can immediately get focused comments from the teachers on the questions asked; A lovely way to design a lecture and a pleasant way to connect it with our earlier exercise; The guiding tasks lightened the lecturing and provided food for thought.* However, you must be slightly sceptical of such positive feedback, as the students could not opt to share their comments anonymously.

CONCLUSION AND DISCUSSION

This study adopted a pedagogical perspective on designing interactive online lectures for undergraduates in distance education. An instructional intervention was carried out with a repeated online lecture that was structured through different activating tasks. The real-time activities of the teachers progressed on the continuum from a teacher- or student-centred approach into more teacher-generated content-related interaction. The thematic content of the lecture remained the same each time, while the student groups varied and the design evolved in the course of the intervention covering four occasions of the lecture. The metaphor of orchestration worked as a framework of the pre-design and the real-time management of students' content-related interaction and teaching actions (Dillenbourg & Jermann, 2010).

Since the undergraduate students taking part in the online course were in the initial phase of their university studies, the authoritative teaching approach was preferred in this study. The orchestration of the final online lecture was pre-designed, enabling the students to compare and evaluate the research practice. In line with prior research, the exploration of the advance organiser seemed to play a crucial role in provoking the content-related interaction during the interconnected phases of the online lecture (Garrison, 2011; Garrison & Cleveland-Innes, 2005). In contrast, the pedagogical design that merely relied on students' internal resources (i.e. their previous research experiences) did not increase the depth of content-related interaction.

Importantly, the idea of orchestration refers to the sequence of the online activities turning discrete activities into a consistent whole (Dillenbourg & Jermann, 2010; Ke & Xie, 2009). In the next ideal model, we describe the linear phases of interactive online lectures in distance education. In the orientation phase, the common object of learning (here a triggering example) engaged the students to explore the critical features of the conceptual theme (Laurillard, 2012). According to the community of inquiry framework by Garrison (2011) and Garrison and Cleveland-Innes (2005), the design of the course has a significant impact on the nature of online interaction. This open-ended activating task defined by the teachers reduced the transactional distance in the teaching-learning

relationship during the knowledge-transmitting lecture. In dialogues between the students and the content, the students and the teacher and among the students, the comments were often built upon the comments of the other (Moore, 2013). Consequently, the students' previous experiences and understanding were integrated with the conceptual knowledge in the knowledge-construction phase. Finally, in the conclusion phase open dialogic space was needed to promote the ownership of learning and the application of conceptual knowledge in further learning environments (cf. Wegerif & Mansour, 2010).

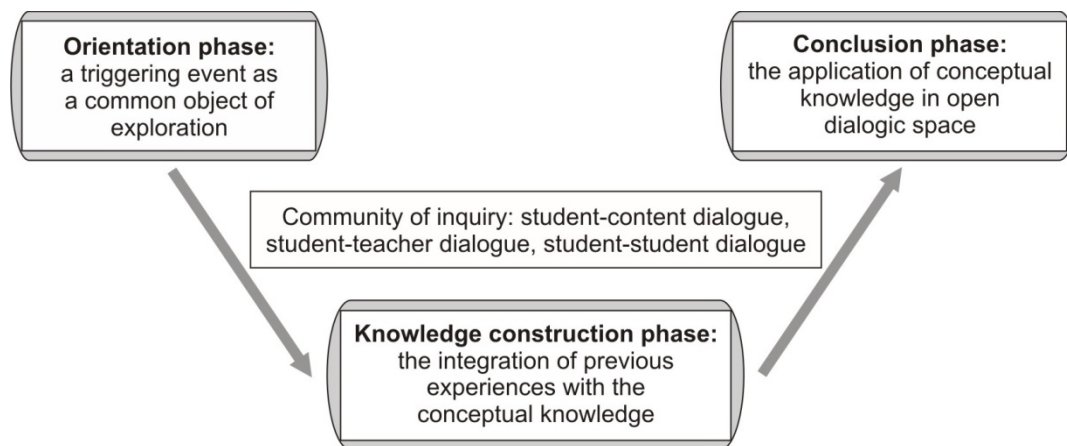


Figure 2. The ideal phase model of content-related interaction

Although the thematic content of the lectures remained constant and the student groups had uniform previous research experience, one must be cautious with the generalisation of the findings. In this research setting involving distance education in an open university, the biographical background of the participating students in each online lecture was fairly heterogeneous. It may be that students' participation was dependent on their varying knowledge and skills. The various online courses were not either systematically evaluated by the students themselves. Basically, the transactional distance (composed of structure and dialogue), defined by Moore and Kearsley (1996) as a potential cognitive gap between the student and the teacher, seemed to decrease in the course of the lectures. This was to be seen in the way the interactive lectures engaged the students' attention to the conceptual themes.

From the pedagogical perspective, the tight schedule prevented the full enhancement of content-related interaction. This manifested in all phases of the final online lecture that launched most content-related interaction. If some of the reflective tasks had been assigned beforehand, the teachers might have had more time to select a set of key comments and bring them into greater focus by a deeper critical reflection in the final phase. Likewise, the teachers could have more opportunities to work as improvisers of the knowledge-integration processes if they were able to create more dialogic space for students' open questions and free discussion. In this way, the processes of students' deep-level knowledge construction and integration may have been supported in real-time adaptation.

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