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The aim of *Open Praxis* is to provide a forum for global collaboration and discussion of issues in the practice of distance and e-learning.

*Open Praxis* welcomes contributions which demonstrate creative and innovative research, and which highlight challenges, lessons and achievements in the practice of distance and e-learning from all over the world.

*Open Praxis* provides immediate open access to content on the principle that making research freely available to the public supports a greater global exchange of knowledge.

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http://dx.doi.org/10.5944/openpraxis

ISSN 2304-070X

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Brief report on Open Praxis dissemination, abstracting and impact

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The editorial project for the relaunching of Open Praxis as the ICDE scholarly, peer-reviewed and open access journal included three main aspects: editorial process, scientific quality and dissemination (Gil-Jaurena & Malik, 2011). After 6 published issues in 2013 and 2014, let’s focus on the last aspect, related to visibility of the journal. The use of Open Journal System (OJS) -an electronic journal management and publishing tool- facilitates dissemination, as its features include comprehensive indexing of content part of global system, reading tools for content (which show indexing metadata, citations formats, info about the author, etc.), and email notification and commenting ability for readers.

The fact of being an open access journal makes the publication more easily available and visible. Permanent actions developed in order to promote Open Praxis are (Gil-Jaurena, 2013):

- Announcements are published in the journal website. Registered users in the site (as readers, authors and/or reviewers) get notifications by email.
- The journal uses RSS, so users can get automatic updates and sites can aggregate content, as it happens with sites such as JournalTOCs.
- ICDE Newsletter announces news about Open Praxis regularly, reaching all its members.
- Open Praxis maintains diverse social media profiles: a Twitter account, @ICDEOP, informs about news, calls, announcements related to the journal. A Facebook page and a topic in Scoop.it! are also used for Open Praxis news.
- Any user can share each article via Twitter, Facebook, CiteULike, LinkedIn, Mendeley, ResearchGate, etc. (using AddThis).
- The assignment of a digital object identifier (DOI) to each article guarantees conservation in the digital world. It also promotes visibility, as publications with a DOI can be easily linked to researchers' profiles, such as ORCID.
- Articles are published with a Creative Commons License that allows, among others, to post the journal’s published version to an institutional repository. Some authors have done so, and it is something that we expect to promote more actively: the increasing involvement of authors themselves in the dissemination of their papers.
- All papers published in Open Praxis in 2013 (volume 5, issues 1 to 4) have been published in a printed compendium, to celebrate the 75th anniversary of the International Council for Open and Distance Education—ICDE. Copies have been delivered to ICDE members and to Open Praxis contributors during 2013, including authors, reviewers and Editorial Board members. This compendium promotes preservation and availability of the journal in physical libraries. It is also available as a pdf.

With regards to dissemination an also related to quality, abstracting and indexing is a main concern for scientific journals. During the first one and a half years after relaunching, Open Praxis has been submitted to diverse databases and catalogues for evaluation and inclusion. In July 2014, Open

DOI: http://dx.doi.org/10.5944/openpraxis.6.3.149
Praxis can be found in the Directory of Open Access Journals (DOAJ), EdITLib, Google Scholar, Dialnet, WorldCat, Information Matrix for the Analysis of Journals (MIAR), etc. An agreement with EBSCO was signed in March 2014. Updated information is available in the journal website, http://openpraxis.org/index.php/OpenPraxis/pages/view/indexing. Abstracting and indexing is an ongoing process and Open Praxis will be submitted to other databases and catalogues as soon as the journal meets the evaluation criteria and formal requirements, especially minimum years of regular publication.

Some figures about dissemination and visibility of Open Praxis let us know that, from the publication of issue 5(1) in January 2013 until July 20th 2014, we have had more than 77000 pageviews, more than 21000 sessions and more than 14000 users from 168 countries, being the top ten the following (in descending order): United States, United Kingdom, Spain, India, Canada, South Africa, Australia, Mexico, Indonesia and Germany (info provided by Google Analytics). About impact in social media, we have reached more than 320 followers in Twitter and more than 580 tweets have mentioned Open Praxis (278 tweets sent by Open Praxis are not included).

Regarding impact in the academic arena, our Google Scholar profile counts 74 citations to Open Praxis papers published in 2013 and 2014. From 32 papers published in 2013, 19 have received at least one citation in a variety of scientific journals, conference proceedings, books and other specialized works. From 16 papers published in 2014, already 2 have received at least one citation.

After this brief report on Open Praxis dissemination, let's introduce this third Open Praxis issue in volume 6. It is an open issue covering different aspects related to open, distance and flexible education; six articles are included in the research papers section, and three focus on innovative practices.

The first two research papers focus on OER and highlight aspects related to quality, repurposing and adaptation of open educational resources.

Thomas Richter and Patrick Veith (Fostering the Exploitation of Open Educational Resources), contrast different aspects in the life cycle model of educational resources in commercial and open scenarios, placing quality as a basis for OER. They analyze which specific quality demands exist for OER and propose to consider both appropriateness and formal quality in the implementation of a common standard. They provide an exhaustive and updated bibliography, useful for any researcher or practitioner interested in OER.

Alison Buckler, Leigh-Anne Perryman, Tim Seal and Shankar Musafir (The role of OER localisation in building a knowledge partnership for development: insights from the TESSA and TESS-India teacher education projects) present a paper that the OCWC 2014 Programme Committee pre-selected for publication in Open Praxis in the frame of the agreement with the OpenCourseWare Consortium (now Open Education Consortium). Other selected papers were published in vol. 6 issue 2. Located in the “pedagogical impact” strand, the paper reflects about adaptation of OER upon the experience developed in two projects in Africa and India. From a qualitative approach, they provide some insights to consider when dealing with contextualization of OER.

Daniel Dominguez and Paz Trillo Miravalles (Learning Competences in Open Mobile Environments: A Comparative Analysis Between Formal and Non-Formal Spaces), involved in a research project funded by the Spanish Government, compare the use of mobile technologies in formal and non-formal educational or learning settings. Conceptually framed in sociocultural ecology, they analyze the competences (instrumental and advanced skills and knowledge) that university students acquire through the use of mobile technologies, which differ between both scenarios. They identify some implications of these results for further analysis and practices.

Chryssoula Themelis (Synchronous Video Communication for Distance Education: the educators’ perspective) deals with other technology, SVC, and presents a research where educators from
different countries have been interviewed regarding how they use synchronous video in distance education. The results derive in a theory of praxis, called tele-proximity, that consist on tele-teacher, tele-cognitive and tele-social presences (explained in the paper); it may help to better understand and use SVC.

Adhi Susilo, in his paper Emerging Technologies Acceptance in Online Tutorials: Tutors’ and Students’ Behavior Intentions in Higher Education, presents a survey-based research that analyses the factors that influence instructors’ and students’ intentions to use emerging technologies. The variables considered are emerging technologies reaction and understanding, and technology competences, being the latter the most relevant one. With a broad theoretical section, the paper also includes the survey used in the research as an appendix.

Victoria I. Marín and Gemma Tur (Student Teachers’ Attitude towards Twitter for Educational Aims) also focus on attitudes towards technology, specifically Twitter. They compare two different learning activities developed with face-to-face students, where Twitter was used and its educational impact was discussed among the students. The paper includes students’ (future teachers) comments and reflections about Twitter in their own learning processes and in their future teaching. Considered as a preliminary approach to the topic, the authors suggest further research and questions to be addressed.

The innovative practice articles section is opened with a contribution by Teresa Aguado, Fernando Monge and Alicia del Olmo (Virtual Mobility in Higher Education. The UNED Campus Net Program), who describe a virtual mobility program developed in a partnership between different universities in Europe and Latin America. They present how the program was managed, highlighting administrative aspects that need to be considered, and collect students’ and professors’ opinions about the experience. Betting on this kind of experience, they finally summarize some challenges faced by institutions involved in virtual mobility.

Marilyn E. Laiken, Russ Milland and Jon Wagner (Capturing the Magic of Classroom Training in Blended Learning) present an experience where a group of educators in Canada have converted a face-to-face training into an online learning practice. Building upon a set of principles on adult learning, they narrate the design process they followed and identify a set of challenges and lessons learned in relation to relevant aspects for practitioners in blended and online learning, such as the implementation of active exercises or formative assessment.

Finally, Luisa Signor and Catherine Moore (Open Access in Higher Education—Strategies for Engaging Diverse Student Cohorts) reflect about a study program in Australia where students have no entry requirements and present a diverse profile. They elaborate different strategies adopted to address diversity and equity. These strategies refer to technological, motivational or methodological aspects, and are framed in an approach to diversity that values the rich background that mature learners provide, also in online scenarios.

It is our wish in the journal that the variety of topics covered in this open issue contributes to reflection, debate and improvement of practices on open, distance and flexible education.

Special thanks from Open Praxis to the authors and reviewers who have collaborated in this issue.

References


Fostering the Exploitation of Open Educational Resources

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Abstract

The central concept behind Open Educational Resources (OER) is opening up the access to educational resources for stakeholders who are not the usual target user group. This concept must be perceived as innovative because it describes a general economic and social paradigm shift: Education, which formerly was limited to a specific group of learners, now, is promoted as a public good. However, despite very good intentions, internationally agreed quality standards, and the availability of the required technological infrastructure, the critical threshold is not yet met. Due to several reasons, the usefulness of OER is often limited to the originally targeted context. Questions arise if the existing quality standards for Technology Enhanced Learning (TEL) actually meet the specific requirements within the OER value chain, if the existing quality standards are applicable to OER in a meaningful way, and under which conditions related standards generally could support the exploitation of OER.

We analyze quality standards for TEL and contrast the life cycle model of commercial learning resources against the life cycle model of OER. We investigate special demands on quality from the context of OER and, taking the former results into account, derive emergent quality criteria for OER. The paper concludes with recommendations for the design of OER and a future standard development.

Keywords: Life Cycle Model; Open Educational Resources; Prosumer Model; Quality; Quality Concept; Technology Enhanced Learning

Introduction

In recent years, the concept of openness in education has attracted substantial attention (Downes, 2005) with support from national and international institutions and organizations, e.g. the William and Flora Hewlett Foundation, UNESCO, MIT and the Open University UK; “Openness” in this context is related to sharing educational resources as well as experiences and knowledge between all stakeholders in the educational sector. Peter and Deimann (2013) introduce the long history and role of the concept of openness in education and Atkins, Brown and Hammond (2007) comprehensively describe the development of the OER movement and discuss some key-achievements. The Commonwealth of Learning (COL, n. d.) describes Open Educational Resources (OER) as “materials offered freely and openly to use and adapt for teaching, learning, development and research.” In contrast to this very wide definition, which includes printed material as well as applications that support the production, management, and use/reuse of learning contents, the definition of Conole and McAndrew (2009) limits OER to digital learning materials that are freely available for use and repurposing. For this paper, the latter definition was adopted.

For the context of India, Kumar (2009) claims that the current way in which traditional education is being organized will not meet the growing demands to develop a society of knowledge. D’Antoni (2007) promotes OER as a possible solution, recognizing the potential to play a central role in achieving educational justice in the world. The study from Benavot (2011) implies that even if shared educational standards were internationally implemented, these would revolve around routines and basic skills but diverge when it comes to more cognitively demanding tasks. We argue that the sheer availability of OER could already prove a definitive solution.
During the past decade, the European Commission has funded several projects, which dealt with the production, collection, presentation, quality, and management of OER. Just to name some related projects “Ariadne” (on-going), “OrganicEdunet” (ended 2010), and “Open Science Resources” (ended 2011) focused on metadata and building repositories of already existing OER; “Concede” (ended 2010) investigated approaches for the production and development of a quality concept for User Generated Content; “QMPP” (ended 2007) dealt with Quality Management for Peer Production of E-Learning; “OERTest” (ended 2012) analysed the assessment of learning achieved through OER; “OpenDOAR” (ended 2011) collected and described international OER repositories; “OPAL” (ended 2012) fostered Open Educational Practices and developed guidelines for stakeholders involved in education; “ROLE” (started 2014) supports teachers in developing the open personal learning environments for self-regulated learning; “Open Discovery Space” (started 2012) focuses on school education: providing a community platform for open knowledge-exchange amongst teachers, indexing approximately 1.5 million Europe-wide distributed learning resources and practically supporting teachers with tools and guidelines.

The Open Educational Quality Initiative (OPAL) investigated barriers to the use of OER in the context of Higher Education. This investigation was driven by the insight that a critical extent of using OER was not met (Cantoni, Cellario & Porta, 2004); despite the successful promotion of the idea that knowledge is a public good (Smith & Casserly, 2006) and the availability of great amounts of highest quality resources. OPAL revealed three issues as the major barriers to using OER, two were related to policy makers as these were a “missing reward system” (strongly supported through the study of Koppi, Bogle & Lavitt, 2004 and Schellenbach-Zell & Gräsel, 2010) and the “not-invented-here syndrome,” which actually reflects the lecturers’ fear of loosing the reason to hold ones own position (Andrade et al., 2010). Solving the latter issue is more than just related to policies, as it requires a fundamental paradigm-shift of the understanding of the role of a lecturer (Keyser & Broadbear, 2010). We promote the idea that a lecturer should hold ones position due to unique experiences and the particular ability to share these with the learners. The third major barrier that OPAL revealed was a lack of trust on the appropriateness of OER (Andrade et al., 2010); the significance of this has been confirmed by Alevizou (2012).

This paper focuses on the usability of OER as a source for special quality demands. It will be shown that the concept of “knowledge as a common good” induces different and additional criteria to those that hitherto are addressed within the existing quality standards. Eventually, some easy to follow recommendations will be provided on how the use and particularly the repurposing of OER can be fostered.

**Quality Standards for Technology Enhanced Learning**

When thinking about the quality of learning resources, quality standards come to mind. The International Organization for Standardization (ISO) defines quality as the “degree to which a set of inherent characteristics fulfils requirement” (van Nederpelt, 2013) and “standard,” as “a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose” (ISO n. d.). Montandon (2004) understands standards as sets of criteria, which at least need to be met by products, methods, or processes. Adelsberger and Pawlowski (2001) highlight the necessity for implementing standards in the field of TEL because the underlying constitutive consensus between the various stakeholders facilitates accessibility, adaptability, exchangeability, compatibility, system- and platform independence, reusability, findability, sustainability, expandability, usability, and economic efficiency.

*Open Praxis*, vol. 6 issue 3, July–September 2014, pp. 205–220
In the context of TEL, various quality standards are related to the design, creation, provision, and management of educational resources. Further standards deal with technology-related issues, such as, implementation guidelines for Learning Management Systems (e.g. SCORM; Jesukiewicz, 2009). In the following, selected standards are being introduced that focus on the quality of learning contents and scenarios.

- “Dublin Core” (DCMI, 2012) is an initiative that fosters the unified description of learning contents through metadata, i.e. the Dublin Core Metadata Terms.
- The international standard “Learning Objects Metadata” (IEEE, 2002) particularly deals with the description of course content and course requirements.
- The “IMS Content Packaging Information Model” (IMS CPIM, 2004) defines criteria on how learning contents should be structured to ensure their exchangeability.
- The “ISO/IEC 10796-1:2005” (ISO, 2005) defines a structured process-model on how TEL systematically can be developed and designed through all production steps, starting with the needs analysis and ending with the analysis of feedback regarding implemented resources. The concept of quality behind this approach is to ensure that all related design decisions are fully transparent.
- The “IMS Learner Information Package” (IMS LIP, 2005) specifies particular characteristics of learners. The IMS LIP provides a facility to add content to individual learner profiles, e.g. certificates awarded within the OER, and thus enhances the communication between different learning environments. These characteristics can be stored and managed either within target group profiles or individual learner profiles.

Learning resources usually are being produced for a very particular context, such as a Project Management course for university students of Information Systems in the third semester in Germany. For commercial educational resources, the above briefly introduced standards are perfectly suitable to comprehensively describe related scenarios (context & content): a user in a very similar scenario who searches the Internet for such an educational resource, will be able to find it by using the corresponding key words in a search engine. This user will also be able to reuse it if the required technological conditions are met; given that the resource is accessible through the Internet and the corresponding metadata were properly and comprehensively defined and attached by the original authors or the hosting service providers.

Production, Use and Repurposing OER

A key success factor for OER is that such educational resources can be found and used by anyone, anywhere in the world in whatever educational context. However, the producer originally designed the educational resource with a certain purpose and targeted a specific user-context. A stakeholder looking for already existing OER that are to be reused in his particular context (in the following referred to as “re-purposer”) is very unlikely to find one, which exactly matches all context-specific requirements. Customizing of OER appears to be obligatory in such a scenario (Dichev & Dicheva, 2012); at least if the resources are to be reused for teaching purposes. This process of repurposing changes the “traditional” life cycle model of learning resources (Fulantelli, Gentile, Taibi & Allegra, 2008). The formerly single-source production scenario for traditional learning resources...
becomes, over time, a peer-production scenario. Open learning resources do not reach their peak of maturity at a particular point of time, which is when a traditional learning resource is not changed anymore in terms of e.g., new book releases. Instead, they are continuously being further developed, i.e., improved, repurposed, and eventually re-published in new versions.

In contrast to professional educators who would apply changes to a fund resource in order to make it best possible fitting for their educational purposes and context, an individual learner will probably just select the closest fitting OER found and accept the deviation from what he/she is used to and/or familiar with. Thus, we exclude this particular case from the following discussions.

**Processes and motivators for the production and reuse of educational resources in commercial and open scenarios**

In order to determine individual requirements that arise when already existing OER are to be repurposed and which demands for quality are realistic, processes and motivations around the production and repurposing of OER need to be investigated. In the following, the contexts of commercial production and the use of commercially produced learning resources are contrasted against the contexts of OER-production and the repurposing of OER.

In the commercial production of learning resources (usually commissioned work), a list of requirements is provided including a description of the expected content, the targeted context, the design, and demanded quality criteria; the resource is being produced accordingly. Commercially produced learning resources, if not exclusively produced for a single customer, usually must be generic enough to meet the requirements of a particular scenario and/or a group of learners, so that they can repeatedly be sold. The producer, usually a professional author, is a domain expert, experienced in the use of authoring tools and media, is familiar with related standards, legal issues, and licenses, and eventually gets paid for the completed result.

In contrast to this scenario, the usual producer of OER is not a fully professional author but a practitioner and user himself e.g., a teacher or a professor. Such a practitioner, first of all, produces the educational resource in preparation for their own lecture; because of a current need: The required educational resource is not yet or not easily available for purchasing. Even though this person is professional in terms of educational issues (didactics, pedagogy) and highly familiar with the topic and the targeted context, the media- and technology-related competences might be less developed than those of a professional author, as well as the knowledge about legal issues and quality standards (Hylén, 2009b). Moreover, the final result just needs to be good enough for their own purpose; transferability and reusability are no focal goals in this context. Further, the OER-producer might not have the need for a successful exploitation and thus, will probably put less effort into the documentation through metadata.

In order to discuss issues around the quality of OER and the appropriateness of such issues, one needs to take into account a very general issue, which is that OER often are not planned to become OER during the production process; instead, they originally are designed as learning resources for a single situation and context. After the resource production is completed and the resource has successfully been used in the targeted context, the author of a particular learning resource might decide that it also could be helpful for others and thus good enough to being shared: The original author selects and applies an open license and makes the resource available for public access through the Internet. This is the moment for the formerly private resource becomes an OER. Toffler (1990) speaks of a “Prosumer Model” when a consumer becomes a producer and/or provider. Related to the Web 2.0 movement and the Open Access movement, Bruns (2008) extends this term by defining the concept of “Produsage,” which includes the manipulation and republishing of (changed) resources.
The user who purchases a commercially produced educational resource ("customer") usually has to pay, among other things, for exclusively produced content. If others have already used such content or if it is designed to being used multiple times in similar scenarios, the retailer will likely reduce the cost. Other cost drivers could be required, e.g. quality requirements for correctness, completeness, and appropriateness of the contents, used didactics, language, and implemented design. It is paid for and thus, the consumers eligibly expect that the learning resource meets the requirements of the local curriculum and that there are no unclear legal issues.

A re-purposer, who looks for an OER on the Internet, has no such direct way to influence the content or quality of the learning resource.

The motivation for a professional author to produce and particularly to publish educational resources is expected to be commercially driven, whereas, if the professional author produces for a publisher, he/she might not even be involved in the publishing process. Personal interest in the topic or another kind of intrinsic motivation might have played a role when the job was accepted, but this can neither be postulated, nor generalized. It is assumed that the motivation of a professional author is driven by economic reasons and the opportunity to increase ones reputation. Hylén (2009a, p. 131) mapped users and producers from OER, distinguishing between individuals (practitioners, namely “teachers”) and institutions (such as MIT, Merlot or Open University UK) in order to find out who the users and producers of OER actually were. The very low response rate from the institutions rendered the study useless at this level. However, the study results indicated that at least in the beginning of the movement, the major amount of OER were being produced and provided by public institutions, most in the context of publicly funded projects (ibid, p. 128). According to the individuals, the response rate also was quite low but the results indicate what might be expected on a larger scale: Even though the study included 193 respondents from 49 different countries, “there was a clear bias towards teachers from English-speaking countries” (ibid, p. 131). Hylén (2009b) additionally analysed related motives for institutional and individual engagement in OER. Hylén found six motives for institutional engagement (ibid, p. 138–139):

- “sharing knowledge is [. . .] in line with academic traditions”;
- “leverage taxpayers’ money by allowing free sharing and reuse of resources”;
- “costs for content development can be cut” (better use of available resources);
- “good for public relations and [. . .] attracting new students”;
- “new ways of making revenue [. . .] as advertisement for the institution, and as a way of lowering the threshold for new students”;
- “speed up development of new learning resources, stimulate internal improvement, innovation and reuse, [. . .] keep good records of materials.”

For individual engagement in OER, Hylén found (ibid, p. 140):

- “altruism”;
- “the pleasure of being involved in peer production”;
- “strategy for enhancing a final, commercial version” (others help improving);
- “desire for publicity, [. . .] enhanced reputation within the open community”;
- “what is junk to one may be gold to another”;
- “gain access to the best possible resources and to have more flexible materials.”

It is obvious that the motivations to produce, share, and reuse learning resources differs between the common producers and re-purposers of OER, on the one hand, and the professional authors and customers of commercial learning resources on the other hand. Furthermore, particularly “private” OER producers are in a completely different situation than professional authors. This
different situations and preconditions eventually impact their willingness to create records in order to meet formal quality criteria (Koppi et al., 2004; Albright, 2009).

**Formal quality versus appropriateness**

In order to reach an agreement between the involved stakeholders, quality standards have to keep to a high enough level of generality (formal quality). Just, the perception of the appropriateness of a particular educational resource is context-specific and can be expected to bias a very subjective understanding of quality. To illustrate the complexity of such a task, the CanCore\(^{11}\) project, for instance, defined the scope of 46 elements from IEEE LOM (IEEE, 2002) on various levels of detail in order to enhance the resource discovery within the Canadian educational context (Friesen, Fisher & Roberts, 2003). This approach, however, focused on the completeness of descriptions but not on the reusability of OER. Various other projects, i. e. the UK LOM Core\(^{12}\) project, repeated this approach for their respective context. From the specific perspective(s) of the OER producers and re-purposers, appropriateness includes various layers that are not covered by the existing quality standards for TEL. Another critical issue is the fact that understanding, keeping up to date with, and following the commonly agreed quality standards is time consuming and does not necessarily fit into the particular processes of OER production and publication. It can be assumed that what eventually will drive the decision if an OER actually is being reused (or reusable) in a particular scenario, is the re-purposer’s perception of its appropriateness in regard to the targeted context (Mwanza-Simwami, McAndrew & Madiba, 2008). Windle et al. (2010, p. 10) recommend “that quality control is best handled at the point of reuse rather than at the point of delivery.” We argue that in terms of a comprehensive understanding of quality, appropriateness and formal quality should not be separated.

In contrast to the quality of professional content, which actually can be defined with formal criteria because of its limited context for exploitation, the quality of OER is a rather subjective issue because any context might be chosen as the targeted one.

**Types of OER**

In our analysis we did not yet distinguish between different types of learning resources. This information, however, is highly relevant for the definition of an OER-related quality concept, insofar, as the necessary effort to meet a certain level of quality needs to stand in an acceptable (for the volunteering authors) relation to the complexity of a learning resource: Quality criteria regarding an elemental resource might be different to such related to highly complex resources; examples of such elemental OER can be found amongst the large amount of openly available and reusable pictures and sounds.

In the context of the ODS project, around 800.000 OER are hitherto embedded (linked from existing repositories). Amongst these, below 100 educational resources actually are fully structured OER, such as complete courses; the rest, following the type classification from Creative Commons (2011), are unstructured OER that focus on a single topic or idea, or OER with more structure, such as materials grouped by a subject area. For a sound and commonly acceptable quality standard for OER these different types and formats of OER would need to be considered. Forcing authors and/or content providers to generally create the same comprehensive context descriptions for any kind of resource type and provide a large amount of metadata just in order to meet so called “basic demands for quality” could reveal to contravene the efforts to foster the open movement: As an example, the 60 thoroughly defined parameters within the very well designed and comprehensive list of Kawachi (2013) stands against the usual working scenario of the voluntary authors and/or...
publishers. Enforcing the consideration of these criteria for any type of resource might even thwart the opening progress in general instead of supporting it. Even within a specific context the acceptance of such a comprehensive approach is limited. As an indicator for this assumption, not even very prominent projects like CanCore and UK LOM Core have been updated within the last 5 years. It gets obvious that a strict and homogenous definition of context-specific quality indicators/criteria would provide little support in such an open and diverse context.

The international standard ISO/IEC 19788-1:2011 already provides the opportunity to define any kind of resource-based metadata and thus, would be flexible enough to serve as a solution for OER. However, in order to guide authors through the description process and ensure a commonly used vocabulary this standard would have to provide an exemplary list of metadata that actually are relevant and appropriate for OER. As it is right now, the standard is highly complicated to read and costly to purchase. Thus, it does not fit into the common work processes of the OER producers. For OER producers who give away their work results on chance and without expecting an economical benefit, an openly available, simplified and work-oriented version of the standard document would be required in order to save their time and thus, raise the standard’s level of acceptance in the OER community.

Special quality demands in the context of OER

Provided that an educational resource is substantially correct, a commonly understandable language has been used, and the resource has a defined level of quality, e.g. following the suggestions from Philip, Lefoe, O'Reilly and Parrish (2008) regarding a peer-review model for OER, it is still unclear for the re-purposer if it appropriately can be used in the targeted context. In order to discuss special quality demands for OER, respective context-specific aspects were adopted from Richter and McPherson (2012).

Presumed Knowledge

Assumed that an OER that is to be repurposed, is a course module or a full course: does the originally presumed knowledge of learners meet the targeted situation (Kinuthia & Nkonge, 2005)? Even if a certain degree of knowledge is assigned regarding a particular national curriculum (indicated by metadata), how shall a re-purposer of an OER know about the difference between his own and the other national curriculum? In order not to overburden (or under-challenge) the learners, the re-purposer will need to manually check the resource for appropriateness and evaluate emerging adaptation needs.

Didactical Design

Is the didactical design that was chosen for the original context also suitable for the re-purposing context? This issue includes all aspects of didactical design regarding regionally and/or nationally common educational practices, such as preferred learning, self-testing, feedback, and examination styles. Lanham and Zhou (2003) reported in this context that “it has been documented that students from different cultures have varying levels of compatibility with certain learning styles.” Ho and Ko (2006) argue that “the critical questions are what kinds of characteristics do learners need in order to survive in E-Learning.” Marcova (2004) reports that children in Asia “memorize the correct answers for the tests and university students memorize lectures read by the professor for the exams.” Yang, Hung and Ching-Mei (2004) explain that different to the learner centered approaches in the western industrial states, “in Asia, the student learning style is teacher-centered because of the traditional Asian cultural social history.”
In a context where, e.g. multiple-choice tests are uncommon or not accepted for examinations, related tests might need to be excluded from a learning resource or substituted through other testing methodologies. Re-purposers need to manually check any resource (indicators might be provided through descriptions according to IMS LD) and if implemented, need to redesign the evaluation methods, so that the OER is in accordance with the local regulations.

**Context-specific examples**

Are originally used examples actually helpful within the targeted context? Examples are meant to support learners in the development of an understanding of a particular issue. In order to reach the highest possible level of understanding, examples often are contextually biased (McLaughlin, 1999): Learners can best imagine what they already have experienced within their natural environment. As an example, a German course on environmental protection that focuses on the responsible use of water might not reach a high level of understanding when being reused in a Sub-Saharan learning scenario. Even though the course contently is correct and perfectly suitable within its originally targeted German context (as one of the water-richest countries in the world), it might cause major irritations in the Sub-Saharan context, where water is a rare resource and thus, of far more substantial value than in Germany. If the originally targeted context of the OER is properly described through metadata according to the ISO IEC 19788-1:2011 at least an indicator is provided that such regionally specific examples could be included. However, as metadata usually focus on very general issues, the re-purposer will need to manually investigate the learning resource in detail.

**Optical design**

Does the originally applied design of a course meet the requirements of and is it attractive to the learners within the targeted context? We know that there generally are vast national differences regarding e.g. the choice of colours, symbols, and “playfulness” (Banks, 2001; Lõhmus, Lauristin & Salupere, 2006). Because of its high level of playfulness, German learners might perceive a course that has been designed for the Asian context as distracting. McLaughlin and Oliver (2000) claim that “not enough is known about the ramifications of cultural inclusivity for cognitive design of learning resources.” According to Dunn and Marinetti (2007), the choice of colours can cause serious conflicts because of their diverse meanings across different cultures. In Western cultures, e.g. the colour “red” usually symbolizes a danger, an error, or a problem while in some Eastern cultures (i.e. in China) it is understood as a symbol for “good luck.” Another example for a serious design-specific conflict is related to the use of symbols: While the swastika has a very positive meaning in some Asian countries (luck, success) and freely could be applied as bullet-points for lists, its use even violates German law (StGB, §86). Also here, the originally targeted context can be assigned with metadata (ISO IEC 19788-1:2011). While serving as an indicator for a culturally biased course design, the lack of detailed information, still forces the re-purposer to manually check the content.

**Particular cultural issues**

Kearsley (1990) argues that “one complexity of e-Learning is that it is often inappropriately transferred without sufficient recognition of the recipient’s cultural setting.” Are the original content and the implemented learning design appropriate to meet the requirements in the targeted context (Lefevre & Cox, 2006)? Culture clashes can massively lower the learner’s level of motivation (Richter & Adelsberger, 2013) and in the worst case, result in higher dropout rates (Nilsen, 2006). Cultural conflicts can occur for many different reasons. However, following Haberman (1995), “it is not in the responsibility of the learners to adapt the given conditions of their learning context,
but the educational institutions’ duty to ensure that an environment is provided which leads to productive learning for any kind and type of learner.”

It is possible to describe selected aspects of culture through metadata and contrast the originally focused context against the own one (Richter, 2011). Such comparisons can support the re-purposer to take decisions on potential adaptation needs. Examples for such comparable culture-specific elements are the learners’ relationship to and expectation towards instructors (Richter, 2012), particular group-work specific attitudes and expectations of learners (Ting-Toomey, 1988; Cakir, Bichelmeyer & Cagiltay, 2002), strategies for providing feedback and raising motivation (Noelting, Leybold, Roeser & Voight, 2004), time management (Lubega & Williams, 2006), and gender issues (Mac Donald & Hedge, 2006). Because of feasibility, a metadata-based description of the originally targeted context must be generic and thus, its use is limited to serving as an indicator for conflict potential within a particular learning resource. A well-described didactical design might provide additional information on how likely it is that changes need to be applied. However, in the end, the re-purposer has to manually check the resource’s content on semantic level. The re-purposer actually is familiar with the context in which the OER is to be reused and the only one to evaluate the chance if the learners might accept related deviations between the originally focused and the own culture, or the risk if these could turn out to be problematic (Pless & Maak, 2004).

**Historical and political perspectives and religion**

Does a learning resource reflect or contradict the historical and/or political positions in the targeted context or even cause religious conflicts? This is a very general challenge, as it might not “just” cause conflicts in the learning process but additionally violate laws and thus, put the re-purposing instructor into serious danger. McLaughlin (1999) states that “e-Learning is infused with cultural meaning and nuances given that educators bring their own perspectives into the design process.” Examples for such conflicts are different perspectives on historical events (particularly military conflicts), different perspectives on the role of personalities (an archetype in the one context can be perceived as an antihero in the other), different ideas regarding the ideal type of societies and the role of economy and leadership, different religious interpretations, or hard restrictions regarding certain practices which are common in other contexts. The major problem with such issues is that they often are unintentionally implemented by the authors and thus, difficult to find. Metadata and Learning Design Descriptions might help to determine if there is a potential of related conflicts, but neither is able to describe the particular wording within a learning resource. As a local specialist, the re-purposer is responsible to determine change requirements and adapt the resource accordingly.

**Further context-specific requirements**

Our understanding of contextual influence factors (Richter & McPherson, 2012) is still incomplete. We expect to go on finding specific requirements, which we cannot even imagine before getting in touch with the corresponding situations.

As an example, in the context of Visionary Workshops (VWs), which we held in German schools in order to promote the portal of the Open Discovery Space project (ODS), we investigated a school with a focus on inclusive education. In this school, pupils with special needs are jointly taught with mainstream pupils; just that they get differently designed learning materials and are individually supported in the class by an additional teacher. Inclusive classes maybe represent the most “extreme” example for a scenario in which OER are required. In contrast to educational scenarios where all learners are at least considered having similar demands for resource design and content, the
special needs of disadvantaged pupils in inclusive classes differ on individual level. The teachers in this particular VW reported that they mainly use OER for their education because the usually used printed books cannot provide the required flexibility regarding the different needs of their pupils. Perner (1997) found that teachers of inclusive classes generally “prefer using specific resources based on their own and their students’ abilities and needs.” We think that OER have the potential to fill this gap and thus, to support implementing the UNESCO Salamanca guidelines on inclusive education from 1994 (UNESCO, 2003).

In 2011, we conducted a study on barriers against the use of OER in the context of German schools (Richter & Ehlers, 2011). Additionally to the confirmed results from the previously introduced OPAL investigations, the schoolteachers communicated that OER are only valuable for them, if the contents can be modified. In the aforementioned ODS VW in the German inclusive school, the teachers were fully aware of their particular situation and stated that they do not even hope to find perfectly fitting resources. However, they confirmed our result from the 2011 study, and stressed that being able to apply changes to the resources is crucial for them in order to make them appropriate. They reported that if they discovered that already downloaded OER were not adaptable, it discouraged them from further using OER. In this context, they criticized that such “a simple thing” like the indication of data formats and changeability rarely is provided. The study of Atenas, Havemann and Priego (2014) confirms this specific source for frustration. They found particularly that the time efforts required to find and select suitable OER were generally perceived as a barrier.

Limitations

The preliminary assumption in the beginning of section five (special quality demands in the context of OER) that learning resources are implemented in a commonly understandable language was “optimistic” and if at all, its validity is limited to very particular contexts, such as Western European countries. Kickbusch (2001) reports that “four out of five websites are in English, while only one in ten people on this planet speaks this language.” DePalma, Sargent and Beninatto (2006) found that 32.6% of the Internet-users either never or rarely visit English language websites. Adaptability is highly required in order to translate educational resources to a new context. While full courses might rarely be translated, particular elements within the courses, such as figures, could turn out to be very valuable if a translation to the local language is possible (Richter & Ehlers, 2011).

In the discussion, we widely excluded aspects of didactical design because the implementation of related changes for adaptation is usually complex. If adaptation on such a basic level appears to be required, we recommend rather searching for a better fitting resource. However, if and to which extent adaptation is worth the efforts depends on the availability of alternatives, the complexity of required changes, and the local specialist’s evaluation of the efforts-benefit ratio. A general recommendation, thus, cannot be provided and related decisions for both needs and measures need to be “case-sensitively” taken.

Conclusion

For a successful implementation of a common quality standard in the OER community, a sustainable quality concept for OER must consider both the appropriateness and the formal quality. The perceived appropriateness depends significantly on the production scenario, the particular educational context in which an OER is to be repurposed, and the resource type. We have been able to show that there are substantial differences between the common scenarios of professional content creation and OER production as well as between the conditions for usage of commercial content.
and of OER. We mentioned but did not further consider the fact that many OER were never designed as such during the production process but subsequently declared to be OER by their original producers. This surely is another aspect that influences the OER-community’s level of acceptance regarding the implementation of standards and the definition of standardized metadata and documentations. Even though the declaration of a learning resource to become an OER and its uploading to make it openly available are big decisions, little additional efforts are required. It is unlikely that the common OER authors (who are practitioners) and publishers (which might be educational institutions on all levels) will purchase costly standardization documents and invest the time that is required to study, comprehend, and implement them. Thus, if we wish to achieve commonly accepted quality standards in the context of the OER community, new concepts for their design and exploitation might be required.

The second issue we found can be understood as an alternative concept to a comprehensive context description. Following this minimalist concept, an “appropriate OER” must be understood as a document that at least allows re-purposers to modify contents on both the legal (by license) and the technical (by format) level. This should be supported with a definition of the file format and in particular, a recommendation of an application that allows conducting modifications. The corresponding criteria for the quality of OER are not limited to the resources’ changeability but to the proper description if (and by using which software) it actually is adaptable. In terms of quality, these issues define a minimum-quality approach, are easily manageable (and acceptable) for everyone, and thus, should be demanded for OER, at least as a good style recommendation. Within the common standards, e. g., the ISO/IEC 19788-1:2011, this solution could easily be adopted as an OER-related subset of mandatory metadata fields and prove highly supportive for the further exploitation of OER.

**Recommendations**

As a first recommendation, we suggest that the format of any educational resource and the status “changeable/not changeable” should be mandatory to be declared in the context of metadata-based quality standards, in particular (as widely accepted international standard for metadata definition) within the ISO/IEC 19788-1.

Secondly, we encourage all authors of OER who agree that their resources are being manipulated to provide two versions; one version in an unchangeable format (e.g., PDF) that ensures that an OER exactly is displayed in the way it has been designed and another, in a fully and easily changeable format that allows re-purposers to adopt it in order to meet the requirements of their specific contexts. This suggestion particularly includes figures with text. In case of figures that are fully embedded within a document, it would be reasonable to separately provide them in a changeable format within an attached file.

Thirdly, in order to support the life cycle model of OER, we encourage all re-purposers to republish their adapted resources in terms of opening a particular resource for a larger community. In the same context, repository providers always should provide an opportunity to upload repurposed versions of learning resources and to link these with the original ones. In this context, a rough documentation of implemented changes (particularly regarding the new context and purpose) should be mandatory.

**Notes**

1. [http://www.ariadne-eu.org/projects](http://www.ariadne-eu.org/projects)
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COL—Commonwealth of Learning (n.d.). \textit{Open Educational Resources (OER)}. Retrieved from \url{http://www.col.org/resources/crsMaterials/Pages/OCw-OER.aspx}


Open Praxis, vol. 6 issue 3, July–September 2014, pp. 205–220


Open Praxis, vol. 6 issue 3, July–September 2014, pp. 205–220


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*Open Praxis*, vol. 6 issue 3, July–September 2014, pp. 205–220
The role of OER localisation in building a knowledge partnership for development: insights from the TESSA and TESS-India teacher education projects

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Abstract
Open educational resources (OER) continue to support the needs of educators and learners globally. However, it is clear that to maximise their potential more focus is needed on reuse and repurposing. Accordingly, adapting OER for local contexts remains one of the greatest challenges of the open education movement, with little written about how to support communities of users to adapt materials.

This paper emerges from the ongoing debate around education quality in low income countries (LICs), taking as its focus two OER projects led by the Open University – TESSA and TESS-India. These projects have collaboratively developed core banks of OER for teacher education that respond to regional and national priorities and pedagogies. In this paper we explore how the projects have supported localisation of the OER and how processes of OER localisation can contribute to more equal knowledge partnerships in the pursuit of education quality.

Keywords: Open educational resources; Africa, India; Localisation; OER; Teacher Education

“What is the future of open education? Where is it going? I think there is only one answer: localisation” (Wiley, 2005)

Introduction
As ever more open education resources (OER) are produced with the aim of widening access to learning in international contexts, debates around the localisation of OER have been increasingly voiced (e.g. West, Taylor & Teemant, 2011). It is generally agreed that sharing OER across continents is not just a matter of distributing resources to those who need them on a “one size fits all” basis—“whereby the rich north would push these resources at the south without thought of reciprocity” (Glennie, Harley, Butcher & van Wyk, 2012, p. v). Bateman, Lane and Moon (2012, p. 3) observe a tendency for the OER Movement to be seen as (and see itself as) “benevolent, developed country ‘providers’ of OER” as distinct from ‘passive, developing country ‘users’ of them,” while Miyagawa (2005) warns that by ignoring such concerns we may see a global information society resembling “a map of the world in the 16th century composed of those that colonize and those that are colonized.”

Unsurprisingly, an outcome of the 2012 UNESCO World OER Congress in Paris was the suggestion that OER producers need to give more attention to reuse and repurposing, yet adapting OER for local contexts remains one of the greatest challenges of the open education movement (Wolfenden & Buckler, 2012) and very little has been written about how to support communities of users to adapt materials.
Our paper is situated in this literature, and also in the ongoing debate around the quality of education in low income countries (LICs). Access and enrolment have been a key focus of government strategies to meet the international Education for All (EFA) targets and Millennium Development Goals for education: primary enrolment in Sub-Saharan Africa increased five times faster between 1990–2005 than between 1975–1990 (UNESCO, 2010). However, a decline in pupil achievement has been reported across expanding systems in LICs, and targets for increasing the number of teachers and improving the quality of teaching are gaining momentum: “quality” education is increasingly understood in relation to its appropriateness and relevance to learners (UNESCO, 2005; Tikly & Barrett, 2011; Buckler, 2012).

With all of the potential of OER it is essential that the pursuit of global standards of education quality connect with national policies and local needs. It could be argued then that for OER to be truly valuable within an EFA agenda they need to be truly open (in terms of both licence, and access) for adaptation. This paper explores the work of two projects which are working to maximise access to and appropriateness of the OER they create. It describes and debates the localisation processes of the Teacher Education in Sub-Saharan Africa (TESSA) and Teacher Education through School-based Support in India (TESS-India) programmes—two international collaborations developing materials for teachers and teacher educators. It aims to extend the global conversation about the localisation of OER through adaptation and repurposing with the aim of contributing to an emerging framework for localisation to ensure more equitable and sustainable OER development and use.

**Thematic and theoretical context**

Both TESSA and TESS-India were conceived to help address major problems of quality and quantity of teacher education materials in contexts with enormous numbers of unqualified teachers and insufficient capacity to train new and existing teachers. In Bihar state in northern India, for example, 45 per cent of teachers in schools do not have the minimum qualification (MHRD, 2013) and 75 per cent of teacher education institutions did not conduct any training between 2007–2010 (UNICEF, 2010). The Sudanese government raised the minimum qualification for teachers to a degree in the 1990s and by 2002 fewer than 10 per cent of teachers had been upgraded (Wolfenden & Buckler, 2013). Sub-Saharan Africa will need an additional five million teachers by 2030 (UNESCO, 2013).

In addition, existing materials for teacher education reportedly fail to align with national policies or curriculum frameworks (NCFTE, 2009), and fail to integrate national ideas around pedagogy with subject knowledge and the realities of teachers’ practice (MHRD, 2012; Buckler, 2012). Calls for teachers and teacher educators to be given the opportunity to play a more active role in the development of learning materials are common across the world, but especially in LICs where the gap between national goals and local possibilities is often greater (GoI, 2012; MoE, 2008). TESSA and TESS-India intended to harness the affordances of OER to support national priorities, enrich the pedagogic toolkit of teachers, ensure these toolkits are deeply relevant at the local level by involving teachers and teacher educators in their development and embed teachers’ learning in their own contexts, both material and symbolic (Wenger, 1998).

Richter and McPherson (2012, p. 202–204) suggest that “OER will be of value. . . only if they are genuinely reusable or at least fully adaptable,” but local relevance has tended to be an after-thought within the OER movement. UNESCO’s definition of an OER is: the open provision of educational resources, enabled by information and communication technologies for consultation, use and adaptation by a community of users for non-commercial purposes’ (UNESCO, 2002); yet adaptation is
not mentioned in the minutes from a UNESCO OER discussion forum for higher education (Albright, 2005). A recent survey of individual and institutional readiness for OER in India does not cover adaptation of materials (Harishankar, 2012).

In this paper we situate OER localisation within two development paradigms. First, the notion of “knowledge for development” driven by the World Bank (2011) and others: Obamba (2013, p. 127) indicates a “clear shift” towards the conflation of development with learning or knowledge, and McArthur and Sachs (2009) suggest that a knowledge production paradigm is increasingly emphasised in contemporary development theory and practice. Alongside this we consider the “partnership for development” paradigm popularised by policy papers such as Department for International Development’s (DFID, 2005) *Partnerships for Poverty Reduction* document and the older, but still referenced, OECD (1997) approach to development that emphasises collaboration and contextual embeddedness. We suggest that OER have the potential to straddle these to comprise a distinct paradigm of *knowledge partnerships for development*, but only if more consideration is given to their localisation potential. We carried out a small-scale study into the localisation processes of TESSA and TESS-India and, here, we consider how analysis of these processes can provide insights into this developing paradigm.

**The Teacher Education in Sub-Saharan Africa (TESSA) Programme**

TESSA is an OER project based at the Open University (UK) but representing a consortium of teacher education institutions from nine original member countries in Sub-Saharan Africa (Ghana, Nigeria, Kenya, South Africa, Sudan, Rwanda, Tanzania, Uganda and Zambia). The programme is funded through grants from a range of philanthropic trusts and government funds. Between 2006 and 2009 TESSA academics collaboratively created a bank of 75 Pan-African OER study units for teacher development in five subject areas (literacy, numeracy, science, social science and life skills/arts); all units followed the same template of activities, case studies and resources. Materials were developed through workshops and followed up with virtual working. The resources are conceptualised as a “professional learning and strategy toolkit” and are characterised by a focus on school-based development supporting teachers to “interrogate and expand their repertoire of practice” (Wolfenden & Buckler, 2012, p. 3) and aim to shift the dominant frame of learning within a classroom. The programme also supported a localisation and translation process as well as providing support for integration of the materials into existing programmes, or the creation of new programmes depending on the needs of each institution (see www.tessafrica.net).

**The Teacher Education through School-Based Support in India (TESS-India) Programme**

TESS-India, also based at the Open University (UK), is a DFID funded initiative that drew on the success of TESSA, but was not an attempt to replicate the process in a different geographical context: the aims, purpose and process were determined through collaboration with the main stakeholder, India’s Ministry of Human Resource and Development (MHRD), and the materials were developed to align with the pedagogic strategies outlined in the National Curriculum Framework (NCF) (2005) and National Curriculum Framework for Teacher Education (NCFTE) (2009). TESS-India OER materials have been developed collaboratively with Indian teachers and teacher educators and consist of teacher development units (TDUs) in elementary and secondary maths, science and English as well as leadership development units (LDUs) for teachers and school leaders (see www.tess-india.edu.in).

For both projects, the broad distribution goals necessitate localisation of resources to meet end users’ diverse linguistic, cultural and pedagogic needs. Both TESSA and TESS-India adopted a
two-tier model of localisation. In line with OER practice, use of Creative Commons licensing for all resources will allow for adaptation by the end users: teacher educators, headteachers and teachers. However, an earlier stage of supported localisation is embedded within the production process via a series of workshops in which local academics work together to version resources in terms of language, imagery and cultural references. Participants then take a portion of the materials away with them to complete. It is on this initial phase of supported localisation that this paper focuses.

**Methodological approach of the study**

Initially, the aim of this research was to focus on the outcomes of the TESS-India and TESSA materials (i.e. the specific changes made to the localised materials). We hoped to develop a better understanding of these changes through a better understanding of the perspectives and processes underpinning the localisation process. However, changes to the time-frame of the TESS-India project following the appointment of a new academic director, and a re-framing of the OER meant that the localisation process as it is reported here will not be replicated across the project and (at the time of data-collection) there were too few localised OER to analyse robustly. Our research questions, therefore, became focused around the process of localisation itself, not just as a means to an end (in which the “end” is a localised OER) but as a site of knowledge partnership and knowledge production.

We adopted a small-scale, qualitative and reflexive approach to understanding the localisation processes of these two projects. Our research was small-scale because we wanted to capture activities at the two early TESS-India localisation workshops in a way that might inform the re-framing exercise. It was qualitative, with an intention to “make vivid what had been obscure” (Eisner, 2001, p. 136) through an exploration of how participants in the localisation processes of the two projects “made sense” of OER localisation and how they “made sense” of their experiences as OER localisers (Merriam, 2009, p. 13). The research was reflexive because it was necessary for us to acknowledge our positionality as members of the Open University UK whose roles are affiliated with the TESSA and TESS-India projects (although not directly involved in the localisation process) as well as acknowledging that TESSA is an established project with several widely reported successful outcomes (e.g. Harley & Barasa, 2012), while TESS-India is a new project and was in a state of transition when the study was carried out. Our methodological approach was selected to “meaningfully shape rather than distort” (Smith, 2000) perspectives from across the two projects in a way that would provide insights into the ongoing development of TESS-India and other OER projects.

Table 1 gives a summary of the data upon which our research is based. Data from the TESS-India project was collected through participant observation at two localisation workshops involving localisers from the three states of Bihar, Madhya Pradesh and Uttar Pradesh. This allowed for detailed examination of the ways in which those tasked with localising the resources worked together to identify aspects of the adaptation and the support required for this task. Observation was carried out by the Hindi-speaking author in order to capture the details and nuances that were difficult for the other authors to interpret through a translator. Additional data was collected in the form of workshop reports and interviews with participants including two facilitators and three localisers. The TESS-India data was analysed alongside a retrospective analysis of TESSA adaptation documents and interviews conducted between 2009–2010 with two facilitators and eight participants (four Ghanaian, two Kenyan and two Sudanese) from three TESSA localisation workshops. A thematic approach to analysis was undertaken that drew on Chase’s (1995; 2003) guidelines for coding narrative data. Themes were sought in particular that responded to the research questions.
around conceptualisations of OER and how knowledge is developed and shared, although several new themes emerged from the data, relating particularly to logistical issues around the process of localisation. Highlights from the analysis are discussed below.

**Developing communities of practice for localising OER: two case studies**

This section outlines the process of localisation as it occurred in the two projects. It is not intended as a “how to” guide. Indeed, localisation of OER must necessarily be a process designed with the very specific needs and skills of the end-users in mind. However, a practice in which OER developers and/or users explicitly describe processes of adaptation, including the choices and justifications of these choices involved, could be of tremendous value to the OER community. This section aims to contribute to this limited literature.

**The TESSA localisation process**

For TESSA, a consortium of institutions from nine countries, localisation took place initially through regional workshops lasting two or three days, followed up by almost a year of materials development. Prior to this, workshops were held with TESSA coordinators from all institutions in order to “develop collective understandings of the factors to be considered when adapting OER for use in a particular environment” (Wolfenden, 2008, p. 2). A collective decision was made that 40 per cent of each Pan-African TESSA study unit would be open for adaptation in the supported process; it was intended that this would ensure that the materials “spoke to experiences of teachers in a particular context whilst retaining the integrity and internal consistency of the OER” (Wolfenden & Buckler, 2012).

TESSA institution coordinators were responsible for the recruitment of staff to undertake the localisation process, often drawing from the pool of original TESSA authors: “they knew what kind of people they wanted, and the ones they chose had already demonstrated skills but more importantly commitment to the idea of OER: there was much less drop-out of localisers than there were authors” (TESSA localisation facilitator, 2010). A minimum of two localisers for each subject

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**Table 1: Data sources, collection and analysis methods**

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<thead>
<tr>
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<th>Sources</th>
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<td>Mid-2010</td>
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<td>Workshop facilitators</td>
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<td>Workshop participants</td>
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area was suggested for each country although due to staff-commitments Nigeria was the only country which could provide a full cohort. Institutions were paid by the project and given autonomy on how the resources were spent—usually on staff-buyout; few localisers were paid directly for their work on the materials as it was built into their institutional duties.

A TESSA localisation handbook was provided to all participants, and at some of the workshops trips to local schools were included to act as a basis for discussion and as case studies for testing out ideas regarding what changes would be appropriate. Workshops included presentations about the original TESSA materials and the principles behind them and “mock” localisation activities in groups, but the majority of the workshop was for the localisers to work on their materials, supported by the facilitators and each other. Depending on the number of localisers involved, support required and adaptations necessary, the first draft of localisation tended to be completed at the workshop. Over a period of several months, subsequent drafts (often up to five) were completed, edited and developed electronically with the exception of Sudan where localisers adapted the materials by hand and delivered hard copies (some travelling several hundred miles) to the TESSA coordinator at the Open University of Sudan. While the Ghanaian materials remained in English, the Kenyan materials were translated into Kiswahili and the Sudanese into Arabic after the localisation process.

The TESS-India localisation process

TESS-India localisation was also launched at workshops; one in Madhya Pradesh and a combined workshop for Uttar Pradesh and Bihar held in Lucknow (UP). This stage of localisation focused on three subsets of the TESS-India TDUs: elementary English, elementary science and secondary maths. These were the first subject areas to be completed and consisted of 45 TDUs.

As TESS-India is managed through the national and local governments in India (rather than teacher education institutions, as in TESSA), the State Council for Educational Research and Training (SCERT) released a call for expressions of interest for localisation-related roles to state-level resource centres, teacher education institutions and university departments of education. Interested participants submitted a CV and were invited to an informal interview with the State Representative for TESS-India and the State Localisation Manager (SLM). For each state, two State Localisation Experts (SLEs) were chosen for each subject area. The SLMs were paid through an external agency and the SLEs were given a stipend for attending the workshop then a set amount per unit localised.

The first workshop in UP lasted three days but the programme of the workshop in MP was reduced to two days to account for an unexpected public holiday. Feedback from participants in UP led to the development of a Localisation Handbook created for participants at the second workshop, as well as the provision of a Hindi-English dictionary. The TDUs were translated into Hindi prior to the workshops which were carried out in Hindi with assistance from interpreters.

Localisation was primarily completed in hard-copy. SLMs were responsible for writing the changes into a MS Word document before sending electronically for critical reading, translation checks and quality assurance.

Themes emerging from the data

Technology and time

The collected data revealed some challenges to localising OER that were common to both projects. The most prominent of these is time: all of the participants interviewed felt that the workshops were too short, and all felt that the deadlines for returning versioned materials to the project were

*Open Praxis, vol. 6 issue 3, July–September 2014, pp. 221–233*
too tight. This is partly related to the unavailability and unreliability of technology in the partner countries—a Kenyan TESSA versioner, for example, was sharing one computer with five other colleagues and the Nigerian institute was disconnected from the Internet for several weeks at a time. Technological competence—including the additional complexity of typing in Hindi (a skill none of the localisers could demonstrate)—also worked as a brake in the TESS-India workshops:

“Firstly, the localisers were working with hard copies, scribbling on them. Printing and typing took a lot of time. Reading handwriting was difficult. This is a logistical problem... most localisers do not know typing in an electronic format. They’re not familiar with computers. Only one person at Lucknow was working on a laptop” (TESS-India localisation facilitator A, 2014)

Time pressures were also partly to do with participants’ familiarity with the concept of OER; at each workshop far more time was required for induction than anticipated. Only one of the eight localisers interviewed from TESSA had worked with OER before, so familiarity of OER was a stated criteria for participation in TESS-India localisation. At the time of TESS-India localisation, the OER movement was far more active in India (Kumar, 2009) than it had been four years previously in Sub-Saharan Africa. However, while SLEs had used them in their work, their experience of developing or adapting them was perceived by the facilitators to be limited:

“Most of the people who are SLEs were textbook writers for SCERTs—so they write the state curriculum. They knew of OER but many didn’t really understand what they were. They’ve not really been exposed to OER writing, for example the language or the style” (TESS-India localisation facilitator B, 2014)

Unfamiliarity, in itself, is not necessarily problematic but a key area for future working identified in both projects was the need to build in additional sessions for orientation and practice, as well as follow-up and support.

“I’d give people much more time to familiarise themselves with the underlying philosophy of TESSA, all of it really, the teaching and learning, interaction, distance learning, OER, maybe that would take three days, maybe five days, and then there would be time to learn, and also to get the work done in that incredibly supportive environment that just wasn’t as possible later at a distance. We assumed they could work at an OU pace, which of course was completely unreasonable because we’d been thinking about these underlying concepts for years and we expected them to pick them up in a morning” (TESSA localisation facilitator A, 2010)

Cultural differences and the “right” kinds of experts

A key tenet of both TESSA and TESS-India is the idea that bringing together subject experts and experts in teacher education materials production, OER creation and experts in national education policy and systems will contribute towards a high-quality, nationally appropriate yet locally relevant product. The data suggests that the way “expert” has been defined across the projects highlights cultural differences between the different stakeholders which can influence collaborative working around OER adaptation.

For TESS-India, these issues appear to have their roots in the original OER writing process and in the selection, management and support of the subject experts recruited for this purpose (a key reason behind the re-framing exercise):

“When I’ve seen the authors and the subject leads together I’ve seen very warm, very productive, very collegial relationships which is fantastic—what it should be about—but there were also a few difficulties [and] pedagogic and practical issues that were never really sorted out... Several authors entered into a great dialogue and there was a big mutual benefit, but others felt affronted by any challenge or change... and there was this sense that both sides tried their hardest to avoid conflict. This happened at the localisation workshops too, and it is visible in the materials which barely seemed to change” (TESS-India localisation facilitator A, 2014)
In both projects, responsibility for the selection of participants for versioning and localisation was given to those working in-country. In TESSA, institution coordinators tended to recruit authors of the TESSA materials who had shown particular commitment to the ideals of OER:

“so they knew the kind of people that they wanted and if they’d had problems with writers in the first instance they knew how to select better this time. In fact I think people did better selecting for versioning that they did for writing, there weren’t as many people drop out and I think their understanding of what TESSA was about had grown” (TESSA localisation facilitator A, 2010)

An apparent advantage of the TESSA model in this respect was the direct relationship the programme had with institutions; coordinators could instruct their staff—who were active in teacher education and who already worked collegially—to contribute to the process as part of their professional development duties. In TESS-India, recruitment was managed by the project office in Delhi in collaboration with State Councils of Educational Research and Training (SCERTs):

“So there are no specialist localisers. You need to find people who have been working on content and translation who have some idea of what localisation might mean” (TESS-India localisation facilitator B, 2014)

Many of the TESS-India localisers were considered to be subject experts who had extensive experience of writing textbooks for use in the Indian education system. This experience was both an asset and an obstacle and their ideas around their “autonomy and expertise” needed to be navigated during the workshops: explaining how an OER differed from a textbook, and how the focus of the materials was pedagogy and strategies—rather than subject knowledge—was a key challenge for the facilitators in both projects:

“There were some very intelligent people there, people with PhDs, who really wanted to engage more with the topic than the technique… we didn’t want the TDUs to focus too much on content, on the topic itself, it was the methods that needed to be the priority… we don’t need to duplicate the textbooks, but a lot of people honed in on the subject matter, that’s what they wanted to deal with because that’s familiar territory—that’s familiar to them. The other stuff—the OER stuff—that’s very unfamiliar” (TESS-India localisation facilitator A, 2014)

“The mathematicians, they’re just very focused and maths is maths and you teach it like this, rather than thinking what’s behind the mathematics, or how you make the context relevant to children” (TESSA localisation facilitator B, 2010)

This desire to want to focus on strengthening teachers’ subject knowledge is understandable. In India, for example, the Teacher Eligibility Test (TET)—introduced in 2011 and a pass in which is a condition of employment—is reporting pass-rates as low as 1% in some states (Tol, 2013); it is the professional purpose of these senior curriculum developers to address this deficit in teachers’ subject knowledge. However these experts were so senior many had little exposure to the real and on-the-ground experiences of teachers in their state. Some appeared to have a negative perception of teachers and questioned the value of the OER for many:

“Most of the teachers are clueless about how to teach… For the willing teachers, who are ready to experiment…this will be very beneficial. Frankly speaking…there are two types of teachers. First are the ones who have got no interest in teaching and just teach for the sake of it. There will be no impact on those. The other type are the willing types. These teachers will use the TDUs most and will adapt them as well” (TESS-India localiser C, 2014)

This perspective is especially interesting as it resonates with Indian literature—both policy and academic—around the “explicit positioning” by teachers of some learners as “uneducable” (Saigal, 2012: p. 1011; Menon, Chennat & Gunjan, 2010; Gol, 2012). In contrast, the selection of expert teacher educators for the role of localisation does not resonate with claims in the National
Curriculum Framework for Teacher Education (NCFTE, 2009) that the ‘larger academic debates on equity, gender and community’ do not enter the ‘day-to-day discourse of teacher educators’ and that teacher education happens in contexts which are ‘severed from ground realities as well as the aims of education they espouse’ (p. 10).

**Quality, control and openness**

Falconer, McGill, Littlejohn and Boursinou assert that

> Belief in quality is a significant driver for OER initiatives, but the issue of scale-able ways of assuring quality in a context where all (in principle) can contribute has not been resolved, and the question of whether quality transfers unambiguously from one context to another is seldom surfaced (Falconer *et al*., 2013, p. 4).

The two-tier TESSA and TESS-India localisation processes, with their quite directive initial phase of resource adaptation, are intended to offer a way of ensuring that the changes that are needed to meet local needs actually do take place during the production process, while also allowing for further localisation by teachers and teacher-educators once they have bought in to the resources’ use within their own practice.

Our data suggests that there is an interesting relationship between control, quality and openness—particularly at this interim stage of supported localisation where the intended result is an OER that stands up as an exemplar of quality in terms of its alignment with national policies and the pedagogical approach embedded in these. While in both projects localisation was intended from the start, TESSA managed this process more tightly by determining sections of the materials that could be localised, and sections that couldn't.

> “Versioning was always on the cards. I think that concept was in [the Director’s] head very clearly. What TESSA was trying to do was to have a template that gave a structure and a form so when people used it they knew there was a case study, they knew there was an activity, but that activity is related to them in their context and their particular issues and things that they have to deal with. But, underneath all of that there was an approach to teaching and learning that is consistent and is interactive and helping teachers to have a better impact in the classroom” (TESSA localisation facilitator A, 2010)

Within this structured template and guided activity, practitioners appeared to approach the project in a task-oriented way:

> “You see, the objectives have been decided beforehand. So I was trying always to keep these objectives, not to distract from these objectives” (TESSA localiser, Sudan, 2010)

The TESSA template perhaps prevented some localisers from fully engaging with the concept of being a “partner” in the process. Yet in TESS-India, the absence of such structured support—where localisers in the workshops had more autonomy to make changes—led to even fewer changes being made to the materials:

> “Just changing a few place names, addresses and sticks to stones is quite superficial I think. I would like to see more relating to State-specific objectives, you know, like if they want to see more assessment done in the classroom or if they want more attention paid to low achievers that sort of thing. But as far as I’ve seen they haven’t. Really, I’d like more radical localisation rather than safe localisation but there’s a reluctance, a deference that gets in the way” (TESS-India localisation facilitator B, 2014)

**Some conclusions: building knowledge partnerships in OER localisation**

TESSA and TESS-India both have a strong commitment to knowledge partnerships and this supported stage of localisation is intended to demonstrate—through both process and product—this
commitment. However, the data suggests that the notion of knowledge partnerships is more prevalent in the minds of the localisation facilitators than in some of the participants selected to contribute to localisation activities. While the literature around OER implies that barriers to knowledge partnership are cross-cultural (Miyagawa, 2005), our study of these two projects suggests that these barriers appear to be embedded in the hierarchical structures of institutions.

This appears to be the case whether participants were involved as part of their departmental duties (as in TESSA) or because of financial incentives (as in TESS-India). The enthusiasm participants expressed about the projects and their reported pride in their involvement, combined with a reluctance to challenge the writing and opinions of “experts” and a disinclination to disrupt hierarchical notions about who owns (and should own) knowledge and who should share it suggests that the supported environments for localisation created by the projects only shifted them into the “medium engagement” step of Joanna Wild’s stairway model of educators’ engagement with OER (see Figure 1, Wild, 2012 and Pegler, Fitzgerald, Hardy, Waller, Manista & Wild, 2012). In this model, low engagement involves educators using and sharing resources with no adaptation, medium engagement involves educators integrating OER into core teaching materials and “tweaking” them to meet their own needs, and high engagement involves producing and sharing OER and becoming an advocate for OER use.

This was, of course, the very aim of the workshops and TESSA materials have gone on to be used in (and adapted further for) teacher education programmes across the continent. However, our data suggests that capacity building around the highest level may have increased commitment and enhanced engagement at the middle level. Both projects adopted an approach that can be mapped against a traditional ascent up the ladder; capacity building was limited to induction and “tweaking.” Perhaps if capacity building is focused around high-level engagement, including the production of OER themselves, a localiser may be able to temporarily “climb down the ladder” in order to create a richer product for the project and develop their own skills to create new high quality OER.

“They [the SLEs] really felt that they should be writing their own materials” (TESS-India localisation facilitator B, 2014)

“What I think is [the workshops] are the stepping stones and what I would like is for people to be writing more materials, new materials based on the experience with these that have been written... but I don’t know if we did enough for that” (TESSA localisation facilitator A, 2010)

“So what we should have done is see these people far more clearly as the people that are going to take this forwards and outwards, potentially, they are the writers of new OER, they could make a difference, they could take two OER and stick them together, they could do something really different. So getting

![Figure 1: Wild’s OER Engagement Ladder](image-url)
them to move from a faithful re-version into a more radical change would be something to pursue and we could have gone on that journey with them. And that would have been a really nice way to have gone about capacity building. . . but we haven’t described it as that, we described it as a process where people sign off another product. I think we missed a trick there” (TESS-India localisation facilitator A, 2014)

Getting beyond a low-engagement, piecemeal use of OER is important to the resources’ potential being fully realised within individual OER initiatives, but also to the sustainability of the OER movement itself. However, we suggest that this is only possible if more attention is accorded to issues of user access, skills and confidence to imagine and realise localisation as well as their role and status within the education system. In supported localisation it appears important to aim to develop a community of practice by enabling different forms of reification at the organisational level in order to develop a collective sense of group identity (as OER developers) and purpose (Wenger, 1998). Bateman et al. (2012) argue that the “promise of OER does not reside solely in the resources themselves, but also in developing the conceptual framework and methodological approaches that organise, manage and ascribe meaning to them in a variety of educational environments.” We suggest too that it is not only the end product of an OER that needs to be contextualised, but also the frameworks and processes that lead to and support its contextualisation.

Acknowledgement

This paper was presented at the 2014 OpenCourseWare Consortium Global Conference, held in Ljubljana (Slovenia) in April 23th–25th 2014 (http://conference.ocwconsortium.org/2014), with whom Open Praxis established a partnership. After a pre-selection by the Conference Programme Committee, the paper underwent the usual peer-review process in Open Praxis.

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Learning Competences in Open Mobile Environments: A Comparative Analysis Between Formal and Non-Formal Spaces

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Abstract

As a result of the increasing use of mobile devices in education, new approaches to define the learning competences in the field of digitally mediated learning have emerged. This paper examines these approaches, using data obtained from empirical research with a group of Spanish university students. The analysis is focused on the experiences of students in the use of mobile devices in both formal and open-informal educational contexts. The theoretical framework of the study is based on the ecological focus applied to explanatory models of digital literacy. As a result of the data it is possible to study this framework in depth, taking into account the theories defending an open view of digital literacy. The study may be of interest to instructional designers and researchers in the fields of open educational resources and technologies applied to education in open contexts.

Keywords: affordances; digital competences; mobile devices; open educational environments; socio-cultural ecology; user-generated contexts

Approach and objectives of the study

The use of mobile devices in educational settings presents the following aspects of scope for designing learning practices:

(1) The formative skills of the classroom are extended to other scenarios that are open and delocalised. Mobile learning may take place as part of the student’s normal routine, but this is not the only place.

(2) The aspect of educational ubiquity and the capacity for learning to take place in any context are introduced. To the extent that mobile devices enable learning environments to be extended to other contexts, teaching becomes ubiquitous, since it is possible to learn in, through and from any of the different surroundings that form part of student life.

(3) There is a specific typology for mediation tools. Mediation takes place through interfaces with a particular configuration and functionality, such as touch screens, video viewers and headphones.

In view of these aspects, and others directly linked to mobile learning, it is perhaps appropriate to examine the competences and skills required for undertaking educational processes with these devices. The research that defines this study sets out to respond to the needs that arise from the growing use of mobile devices in education, considered in terms of educational competences and contextualised in higher education and open educational resources and spaces1. In that sense, the main objectives of the study are:

(1) To identify skills linked to the use of mobile technologies and how they affect competences associated with future jobs.

(2) To define new forms and practices for acquiring knowledge, skills and competences.

Reception date: 29 April 2014 • Acceptance date: 7 July 2014
DOI: http://dx.doi.org/10.5944/openpraxis.6.3.131
(3) To analyse the changes associated with the role played by those taking part in learning processes through mobile technologies.

(4) To determine the role of mediation technologies in the transformation and support of creative and innovative learning.

(5) To define the changes and challenges for assessing, certifying and accrediting competences in ubiquitous learning scenarios.

Specifically, the objectives 1 and 2 of the investigation are discussed below. To do this, the schemes that contain skills related to the use of mobile devices in learning situations are analyzed. And also how these schemes evolve when learning situations in the classroom are discussed, along with other non-formal educational situations.

The state of the question: competences within the framework of digital literacy

The ecological approach to the field of educational technology considers that pedagogies and technologies combine to form certain types of behaviours. This approach avoids the emergence of deterministic visions surrounding technologies and enriches the analysis of educational practices that include the use of digital systems. When these practices are mediated by mobile devices, it is appropriate to consider the affordances made possible by these devices for their users. Digital technologies in general and digital devices in particular have many components that enable the spread of social practices and the generation of new forms of learning. It is also appropriate not to consider these affordances in a vacuum but as elements dependent on the context (Belshaw, 2012), a key aspect in the study of educational phenomena that take place in open spaces.

These principles are taken into account in this research, which aims to establish an interpretative framework from which to consider the operational elements examined in this study. Also the analysis of existing literature on digital competences, which shows the diversity of concepts with relation to the researchers’ disciplines and the various projects in which digital competence models have been developed, is taken into account. Thus, concepts like computer literacy, ICT literacy, information literacy, media literacy and web literacy appear, each with its own particular significance but at the same time with common meeting points.

Of all the proposals analysed, the one with the greatest regulatory component is based on the conceptual frameworks developed by Bawden (2008), Martin & Grudziecki (2006) and Van Deursen (2010), upon which Ala-Mutka (2011) proposes a Digital Skill Model based on the knowledge structure, skills and attitudes set out in the European Qualifications Framework. The Ala-Mutka model contains a matrix that includes the following elements (figure 1):

(1) **Instrumental skills and knowledge.** Divided into two blocks: operational and media related.

(2) **Advanced skills and knowledge.** These define the main aspects that have to be learnt to apply to digital settings, mostly in networked environments, and are grouped as follows: Communication and Collaboration, Information Management, Learning and Problem-solving, and Significant Participation.

(3) **Attitudes for the application of these skills and knowledge.** Because of their transversal nature, subjecting them to any sort of regulation is complicated.

The analytical frameworks on which competence assessment and certification are based are generally far removed from ecological models, which mainly take into account socio-cultural variables. The variety of factors characteristic of any open approach to society does not match the aims associated with experimental models, which focus largely on operational aspects and control. If the complexity of competence assessment in open scenarios is to be included, it is essential to
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resort to aspects that are difficult to index, such as those related to participation in communities of practice, the quality of interpersonal relationships or peer-to-peer recognition (Schmidt, Geith, Håklev & Thierstein, 2009).

In this respect, the reference framework for this study has also taken into consideration work done by the Mozilla Foundation (VVAA, 2013b) supporting the development of an open schema that, at the same time, includes an operational definition of competences involved in the Literacy Web. The task undertaken by Mozilla is based on a philosophy of learning through practice. Together with proposals derived from academic studies, its model has taken into account the practical action of user groups following a crowdsourcing strategy. This has enabled the creation of a de facto standard that has been tested in parallel with its conceptual development.

The Mozilla schema for web competence differentiates between skills (a controlled activity that an individual learns to carry out) and competences (a collection of skills with a predefined purpose; in this context, competences are packages of skills) and proposes a simple model based on three core concepts. Each concept has a series of competences that are subdivided into skills (Belshaw & Casilli, 2013):

1. Exploration.
2. Construction.
3. Connection.

It is this last approach which has been used by this research as a reference framework, in such a way that mobile competences are seen as a part or subset of other areas that contribute to information literacy, such as digital literacy, media literacy, web literacy, computational thinking and information technology. Variables of a contextual nature have been taken into account in its construction and interpretation, which allows its development to be related to the environmental and behavioural ecology of the subjects (Rheingold, 2012; Davidson, 2011).

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Figure 1: Structural elements of Ala-Mutka model (Ala-Mutka, 2011: p. 47): Knowledge, skills and attitude items contributing to Digital Competence
Conceptual bases: mobile competences from socio-cultural ecology

Digital competences have a superficial component. Students are increasingly becoming more familiar with technologies and able to cope in a context characterised by information overload. For them, all information has an equivalent value in that what they are seeking is not accurate data but communication with each other. The very nature of the Internet encourages comparisons between a multitude of different sources of information, individually incomplete and collectively inconsistent. This encourages a type of learning based on searching, consulting and synthesis, rather than on the assimilation of a single source of “validated” knowledge, such as that obtained from books, the television or a lecturer giving a conference (McLester, 2007). Within this vast area of digitally mediated learning, mobile technologies are characterised by their capacity to generate highly interconnected educational environments. Learning everywhere is equivalent to some form of simple mobile learning, for example, through environments that can be accessed in different contexts and situations (Marin & Mohan, 2009; Kukulska-hulme, 2009; Liu, & Hwang, 2010; Hwang, Kuo, Yin & Chuang, 2010; Liaw, Hatala & Huang, 2010; VVAA, 2013a). In order to guarantee ubiquitous learning it is essential to integrate a series of mobile technologies around scenarios of convergence, since these technologies increase the educational possibilities of virtual environments in conventional learning. In this respect, the educational experience can be enriched through connecting with people in a known geographical location, information from other equipment and traceability data on the student’s activity. Knowing how to integrate their use is fundamental to the consideration of any mobile competence framework.

In order to analyse these elements, this study opts for the conceptual framework of socio-cultural ecology (Pachler, Bachmair & Cook, 2010). In accordance with this approach, learning through mobile devices is governed by a triangular relationship between cultural practices, social structures and the actions of students in the educational process:

1. **Cultural practices**: Mobile devices are increasingly used for social interaction, communication and exchange. Learning is seen as the creation of meaning that is situated culturally both inside and outside educational institutions, at the same time that the mass media have attained cultural significance in everyday life.

2. **Structures**: Students form part of a new social stratification in which the individualisation of mobile mass media and a complex and abundant technological infrastructure lead to learning being governed by the curricular frameworks of educational institutions with specific approaches towards the use of new cultural spaces as learning resources. Within this framework, spaces for open educational practice, especially the open spaces of the Internet, provide a natural field for mobile learning to develop.

3. **Student action**: Increasingly, subjects are immersed in a new learning habitat in which the worlds they live in are configured as potential means and resources for learning. In such a learning context experiences are assigned individually in relation to the actions the subject is capable of undertaking, whether in his or her daily life or as part of standardised study plans.

Together with the ecology defined by these three components, another important feature, which requires pedagogical answers, is the predominance of what is known as user-generated contexts. As users participate actively by creating their own ways of generating content, learning contexts are also circumscribed by the ambit of the individual. This results in the emergence of new relationships between the context and the execution of mobile communication practices managed entirely by the user. Mobile devices make it possible to produce not only content but also context. In the case of education, they enable the student to develop a new relationship with space (the outside world) and place (the immediate socio-cultural surroundings). Likewise, mobile connection changes
the sequence of traditional communication between educational agents. Students are now producers of content and as such form part of a burst of activity in the content area generated by other users, including teachers.

Finally, the appropriation of technology is a core element for guaranteeing the quality of technologically mediated learning. Technological appropriation is obtained through the processes that accompany personal practices with mobile devices, of which the main ones are: interaction, assimilation and accommodation, and change (Pachler, Cook & Bachmair, 2010).

Accordingly, in the research approach applied, media convergence around mobile devices, together with the association of cultural structures characteristic of their respective environments and habitats, are considered to generate modes of individualised appropriation in the form of learning contexts. Spaces created in this way can differentiate everyday life activities into individually defined contexts and at the same time bridge different and divergent cultural practices, such as entertainment and academic learning. In such a scenario, socio-techno-cultural evolution tends to generate situations in which there is no need to differentiate between media for learning inside and outside formal educational settings.

**Empirical approach and data analysis**

The design of the research focuses on the objective of empirically validating the conceptual approach of the project and the principal aspects that have been described in the previous sections. In the absence of a deep analysis of the compiled information and its cross-referencing with the information coming from the entire study, this section introduces the most notable empirical evidence following the implementation of the principal instruments and that is related to the theoretical perspective.

The method utilized in the first phase of the research (January-February 2013) consisted of a case study carried out with a group of university students. The group was composed of 40 students who studied two undergraduate degree subjects in Communication Sciences (students from the Complutense University of Madrid, Spain) and Social Education (students from UNED—Distance Education University of Spain). This group was then split into five focus groups. Discussion subjects centred on the use of mobile technologies by the students, with the aim of obtaining conclusions on utility and creating knowledge with which to construct the scope of the survey.

Once the principal aspects were explored, progress continued in the second phase of the study (April-October 2013) to make the research representative, for which the sample was expanded to a total of 650 students (students from the following universities in Spain: Granada University, Oviedo University, Vigo University, Complutense University of Madrid and UNED) with the same characteristics as the first pilot group. A survey based on a questionnaire was then used on this sample. The operative variables of the questionnaire derived from the contrast between the theoretical-conceptual aspects of the study and the analysis of the information obtained in the focus groups. The resulting questionnaire consists of 20 items, divided into six aspects:

1. Profile data.
2. Devices and uses.
3. Devices, frequency and use.
4. Devices, functions and applications.
5. Devices, competences and learning.

Shown here are the results of a first analysis of disaggregated data obtained in the focus groups. A simple method of qualitative content analysis based on an inductive process was applied. It was
developed in two stages: first the texts generated in the focus groups were coded, and then these codes were associated with the concepts of the theoretical model used in the research. The codes represent the major units of meaning generated in the discourse of the participants in the focus groups.

In tables 1 and 2, the “Competences” column shows a selection of competences that are relevant to this case. These skills are part of the ecological approach used in the theoretical framework of the study. The “Code” column shows the number of codes in the focus group discussions related to each competency. The number of codes that appears is a variable data, depending on how often participants have referred to each unit of meaning in their conversations going within focus groups. That is, the number of occurrences codes is not related to the number of people involved, but how many times these people have referred to content relevant to the investigation. The “% Codes” column shows the percentage represented by the presence of these codes in the total set of codes generated in the focus groups conversations. The “Cases” column shows how many cases of people named these codes in their conversation. And the “% CASES” column shows the percentage of cases of total people named codes.

In a first phase (tables 1 and 2, figures 2 and 3), the analysis suggests a dual typology of social practices, which changes depending on whether the mobile technologies are used in formal educational environments (in the classroom) or informal environments (outside the classroom). For their part, the digital competences related to mobility are consistent with the ecological focus. A common set of practices that form part of information literacy (similar to those of the Ala-Mutka model, 2011) are validated, but they show great variability when the contextual variables (inside/ outside the classroom) are considered.

### Table 1: Competences acquired with the use of mobile devices in the classroom (formal environment). Selection of valid data

<table>
<thead>
<tr>
<th>Competences</th>
<th>Code</th>
<th>% Codes</th>
<th>Cases</th>
<th>% CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instrumental skills &amp; knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Know &amp; use mobile devices</td>
<td>18</td>
<td>20,0%</td>
<td>29</td>
<td>24,4%</td>
</tr>
<tr>
<td>Know &amp; use software-apps</td>
<td>16</td>
<td>17,8%</td>
<td>25</td>
<td>21,0%</td>
</tr>
<tr>
<td>Access &amp; use media in different formats</td>
<td>20</td>
<td>22,2%</td>
<td>28</td>
<td>23,5%</td>
</tr>
<tr>
<td>Create information</td>
<td>13</td>
<td>14,4%</td>
<td>19</td>
<td>16,0%</td>
</tr>
<tr>
<td><strong>Advanced skills &amp; knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapt &amp; participate in digital communication</td>
<td>5</td>
<td>5,6%</td>
<td>3</td>
<td>2,5%</td>
</tr>
<tr>
<td>Locate, process and organize hyperlinked non-linear information</td>
<td>4</td>
<td>4,4%</td>
<td>4</td>
<td>3,4%</td>
</tr>
<tr>
<td>Create personal information strategy</td>
<td>3</td>
<td>3,3%</td>
<td>2</td>
<td>1,7%</td>
</tr>
<tr>
<td>Plan, execute and evaluate goal-oriented activities</td>
<td>3</td>
<td>3,3%</td>
<td>3</td>
<td>2,5%</td>
</tr>
<tr>
<td>Plan, execute and evaluate goal-oriented activities</td>
<td>5</td>
<td>5,6%</td>
<td>4</td>
<td>3,4%</td>
</tr>
<tr>
<td>Integrate digital tools productively in work, leisure, learning and life activities</td>
<td>3</td>
<td>3,3%</td>
<td>2</td>
<td>1,7%</td>
</tr>
</tbody>
</table>
In subsequent analyses it’s hoped to determine what type of competences are involved in both scenarios, although the first results show that the competences developed in open educational practice environments are more related to advanced skills and knowledge, the area of communication and collaboration, problem-solving and significant participation (table 2 and figure 3). In the following table, the competences are categorized into instrumental skills and knowledge, advanced skills and knowledge, and are listed with their corresponding codes, percentages, and case counts.

Table 2: Competences acquired with the use of mobile devices outside of the classroom (informal environment). Selection of valid data

<table>
<thead>
<tr>
<th>Competences</th>
<th>Code</th>
<th>% Codes</th>
<th>Cases</th>
<th>% CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instrumental skills &amp; knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Know &amp; use mobile devices</td>
<td>5</td>
<td>5,3%</td>
<td>2</td>
<td>1,5%</td>
</tr>
<tr>
<td>Know &amp; use software-apps</td>
<td>6</td>
<td>6,4%</td>
<td>3</td>
<td>2,3%</td>
</tr>
<tr>
<td>Access &amp; use media in different formats</td>
<td>4</td>
<td>4,2%</td>
<td>2</td>
<td>1,5%</td>
</tr>
<tr>
<td>Create information</td>
<td>4</td>
<td>4,2%</td>
<td>2</td>
<td>1,5%</td>
</tr>
<tr>
<td><strong>Advanced skills &amp; knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adapt &amp; participate in digital communication</td>
<td>11</td>
<td>11,7%</td>
<td>12</td>
<td>9,3%</td>
</tr>
<tr>
<td>Locate, process and organize hyperlinked non-linear information</td>
<td>11</td>
<td>11,7%</td>
<td>14</td>
<td>10,8%</td>
</tr>
<tr>
<td>Create personal information strategy</td>
<td>12</td>
<td>12,8%</td>
<td>20</td>
<td>15,6%</td>
</tr>
<tr>
<td>Plan, execute and evaluate goal-oriented activities</td>
<td>10</td>
<td>10,6%</td>
<td>18</td>
<td>13,9%</td>
</tr>
<tr>
<td>Plan, execute and evaluate goal-oriented activities</td>
<td>14</td>
<td>14,9%</td>
<td>26</td>
<td>20,2%</td>
</tr>
<tr>
<td>Integrate digital tools productively in work, leisure, learning and life activities</td>
<td>17</td>
<td>18,1%</td>
<td>30</td>
<td>23,3%</td>
</tr>
</tbody>
</table>

In subsequent analyses it’s hoped to determine what type of competences are involved in both scenarios, although the first results show that the competences developed in open educational practice environments are more related to advanced skills and knowledge, the area of communication and collaboration, problem-solving and significant participation (table 2 and figure 3).
formal scenarios, the most developed skills are those related to instrumental knowledge in the operational area and to managing devices (table 1 and figure 2).

Specifically, these findings could help to improve learning methods in the classroom environment where mobile devices are used as a learning tool. The same can also be applied regarding to more precise knowledge of assessing, certifying and accrediting competences in ubiquitous learning scenarios. As well as the contrast of the data on the types of competences and further research can contribute to strengthen the validity of the learning obtained in open environments through mobile devices. It is expected the development of studies to improve the integration between the two types of learning environments where mobile devices are used, formal and non-formal environments.

Conclusions and discussion

Research in the world of learning competences with mobile devices is usually considered in a way that is differentiated in regard to the skills framework that makes up digital literacy. In this article, a more transversal delimitation is advocated, where mobile competences form part of a continuum in which other forms of literacy, such as information, media, web, etc., also form part. At the same time, the competences derived from literacy in these diverse areas can be studied in a more integrated manner if they are considered with a focus on social practices mediated by digital technology, and by paying attention to contextual variables that may affect how they are put into practice in different environments. As such, the differentiating element between certain competences and others isn’t so much the mediating device that acts as an interface between learning and the rest of the educational agents/resources, but rather specific practices that are carried out in specific environments.

Research has been presented in this article that takes into consideration these conceptual principles and applies them to the case of educational practices mediated by mobile devices.

According to the objectives of this study, the article concludes that the data are consistent with the conceptual framework of social and cultural ecology. In the absence of further analysis,
the research found that the use made by students of their mobile devices during the study in open contexts is similar to how they use them in their daily practices, and these practices can be interpreted as learning processes. These learning processes take place in situations of everyday social practice mediated by digital technologies. So it is possible to understand that both -the ecology and the social context- are crucial to generate that kind of learning. This conclusion is appropriate from the results of this first phase of research. In addition, it is also consistent with the finding that there are differences between the competences that learners put into practice when they do educational assignments using mobile devices in open and closed environments.

Discussion related to these topics could include the need to construct competence analysis frameworks starting from the specific practices of the learners and contextualized in specific environments, whether they be physical, digitally mediated or a hybrid. It may also be useful to talk about the open character of the competence schemas, allowing the integration of diverse visions throughout the process until they become a de facto standard. Lastly, it may be of interest connecting the study on mobile competences with approaches searching for digital literacy models, given that both perspectives are looking for evidence to improve educational practices. And, from an eminently instrumental viewpoint, what can be confirmed is a tendency wherein mobile devices act as the principal intermediary between the learner and open educational resources.

Note

1 Research Project “Aprendizaje ubicuo con dispositivos móviles. Elaboración y desarrollo de un mapa de competencias en educación superior” (“Ubiquitous Learning with Mobile Devices. The production and development of a map of competences in higher education”) (ref.: EDU 2010-17420), National Programme of Fundamental Research Projects of the Spanish Ministry of Economy and Competitiveness.

References


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Open Praxis, vol. 6 issue 3, July–September 2014, pp. 235–244
Synchronous Video Communication for Distance Education: the educators’ perspective

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Abstract
The paper reports on the experienced educator perspective regarding human-to-human connection in distance education. The research questions aimed to fill gaps in the existing research literature, to investigate the role of the educator, to discover how learning and subject content are affected by contextual factors, to find out if it enhances the sense of togetherness (immediacy and intimacy). The Informed Grounded Theory and the Community of Inquiry model provided a scaffolding framework for designing interview questions and analyzing findings. The outcome of the analysis formulated a new theory called tele-proximity, which gives an explanation of how presences could work in synchronicity. The findings may help educators gain insight into how to use Synchronous Video Communication (SVC) and lead future research to dig deeper into the field of synchronicity and the importance of audiovisual cues.

Keywords: cognitive presence; Community of Inquiry Model (CoI); social presence; synchronous video enhanced communication (SVC); teaching presence; Teleproximity

Introduction
Distance education has taken global proportions and more and more people worldwide are studying in an “anytime anywhere” mode (Power & Gould-Morven, 2011). Synchronous Video Communication (SVC) has not been an option thoroughly investigated (Hrastinski, Keller & Carlsson, 2010). Hrastinski heightens the need for more research attention to synchronous e-learning because practitioners, who use and design synchronous learning scenarios, are in urgent need of guidance (Hrastinski et al., 2010) and they do not use them as widely as they could to enhance communication (Smyth, Andrews, Borduenko & Caladine, 2011; Bower, Kennedy, Dalgano, Lee, Kenney & de Barba, 2012). In the same line of thought, Tomadaki and her colleagues indicate that greater integration of videoconferencing with open learning environments and other social media tools needs to be studied to make better sense to learners (Tomadaki, Quick & Scott, 2008) and Gillies (2008) deems that transferring face-to-face approaches to the videoconferencing suite is inadequate. Furthermore, the literature in the field of video enhanced synchronicity is to a large degree, uncharted and unorganized (Bower et al., 2012). This paper, taking into account the gaps in the literature, aims to shed light on the educational experiences of professors who teach online using synchronous video communication and answer the following questions:

- For what educational purposes (learning objectives) do instructors use synchronous teaching approaches?
- How does synchronicity affect teaching, cognitive and social presence?
- What contextual factors do instructors identify as influencing their use of synchronous teaching approaches?

Methodology
The research took place in the field of networked learning interdisciplinary courses for undergraduates and postgraduates, from a potentially international perspective, since the interviewees
come from four continents and ten countries (the UK, the USA, Australia, Canada, France, Greece, Cyprus, South Korea, South Africa and Spain). On average, the participants had 8.2-year experience of teaching distant courses and used synchronous teaching approaches for 5.6 years. The experience in terms of time was the basis upon which the theoretical sampling was based, because the faculty who had the least experience in online education perceived the barriers as greater than those who had the most experience in online education (Lloyd, Byrne & McCoy, 2012). Under the scope of Informed Grounded Theory (Thornberg, 2012) and the Community of Inquiry model (Garrison, Anderson & Archer, 2000), the interview questions were designed.

According to the informed grounded theory (figure 1), the literature review not only helps the researcher to identify gaps, current praxis and narrow down the research questions but also to compare the specific findings with other research outcomes. The next step was to write down the questions for the semi-structured interview. When 18 well experienced instructors had participated, then the data was categorized based on the rationale of open, axial and selective coding. The final stage was to present the core category, teaching approaches and the contextual factors that influence the theory of SVC praxis and fill in the gaps identified in my literature review. At the end, critically reflecting on the memos of the research, the literature and the research outcomes and the researcher built the theory of Tele-proximity.

**Tele-teacher presence**

Teacher presence is the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Rourke, Anderson, Garrison & Archer, 2001). Teacher presence in SVC is called Tele-teacher presence. Being tele-present, educators could add to the authenticity and credibility of the university by coming in real-time contact with students. Many informants have indicated that the presence via synchronous video-enhanced conferencing seems to create new roles, which have the potential to lead to a new identity online while other claimed that good communicators have already developed these skills in class.
Institutional authenticity & teaching persona on screen

The first concept that unexpectedly emerged from the interviews was the authenticity of e-learning courses (figure 2). As respondents put it, people earn degrees without going on campus and professors could instill knowledge and skills without knowing their students. There have been reported cases of dishonest attitudes of users, as well as agencies that provide “tailor-made” degrees dissertations, delivering ready-made courses without evaluation processes and unauthorized access to Internet. If the instructor uses quality time to contact with students, confirming that students are the ones registered for the course, the institutional credibility could be promoted.

Based on the data collected, knowing who is teaching who seems to be an important factor for both sides (students and instructors). For the part of the institution/instructors finding out more information about learners, expectations, learning styles, by synchronously talking with them and confirming identity and from the students’ point of view confirming that the instructor is actually there to support them in person seems to be so crucial that some universities have made synchronous communication mandatory. SVC is a way to potentially safeguard that the degrees are given to those who earn them in order to minimize the cases of identity fraud.

Interviewees underlined the importance of identity/new roles online as well (figure 2). The identities that professors could create online seem to be affected by the instructional design/pedagogy adopted the instructors’ digital literacy, interpersonal skills, the academic expectations/experiences shared quality of audiovisual communication, dialogue orchestration and professional salience.
Instructional design and pedagogy

Instructional design in SVC is defined as the process by which instruction is improved through the analysis of learning needs and systematic development of learning materials, tools and peoples’ roles. While pedagogy as the Greek origin of the term dictates, is the instructor’s leading with the purpose to model thinking, emotions and behaviors. The instructor’s identity is portrayed by the instructional design and the pedagogy adopted on screen.

Educators in this study put emphasis on establishing protocols, making appropriate decision on what synchronous facilities to use and managing groups online. Enforcing their teaching style and design effectively, educators could accommodate students' needs in the limited time provided during online sessions and create a successful, motivated and motivating teaching persona.

Interpersonal skills & shared academic expectations and experiences

Effective communication and personal contact seem to have an impact on all presences in this study and in others. Hsieh (2010, p.34) studied the international perspectives of online instructors and found that teaching personas are based on self–expectations, interactivity/dialogue and evaluation criteria. Interestingly, they are the same as the factors related to Baxter’s research (2011, 2012a, 2012b) on students’ identity building. Interpersonal skills enhance interactivity especially in the diverse audience of online courses. Wang, Liao, Fan, Li and Lin (2009) claim that eastern students have not developed habits for interaction in the online environment compared with western students. Therefore, specific students need more help from educators to develop the habit of interactivity or dialogue and share their expectations and experiences. Hsieh (2010) interviewed online instructors who were very committed to facilitate students and use every technology available including SVC. He has found out that some of them expected to create/design their own teaching materials or tools not available by the institutions to enhance students' motivations and interests for learning as SVC respondents do. Research informants’ views concur with Lloyd and his colleagues’ studies (2012) that interpersonal barriers are increasing transactional distance in online education.

Instructional design/pedagogy and academic expectations define the role of the professor online (Hsieh, 2010) and shape students’ identity (Baxter, 2011). Having realistic academic objectives and clarifying their role as a guide on the side or as a leading figure, educators could portray their tele-teaching presence. Sharing experiences and expectations in web-conferencing environments correlates with student satisfaction with online classes (Gurell, Kuo & Walker, 2010). Parchoma (2005) underlines the significance of clear and productive communication to promote common goals in virtual organization and networked communities. She explains that “maintaining shared perceptions through dialogue foster improvement of social capital” (Parchoma, 2005, p. 471). On the instructors’ side, Baxter’s studies (2011) and SVC educators interviewed, expressed the same satisfaction when interacting with students.

Digital literacy & attitudes towards synchronous video communication technologies

Educators pointed out that a teaching persona could be affected by technological obstacles, digital literacy and confidence in using the tools. Drawing similar examples from literature review, Bower wrote:

Firstly, there are several tools to master; secondly, different tools need to be selected depending on communication requirements; thirdly, the affordances of tools in combination require consideration; and fourthly, decisions about how to use tools often need to be made in real time (Bower, 2011, p. 63).

Managing synchronous video mediated environments contains inherent difficulties above and beyond those experienced in face-to-face contexts because of the technology and mastering
the technology. As a result, instructors need to improve either their digital literacy or demand for significant technical support from the institutions they work for.

Xiaoxia “Silvie” Huang and E-Ling Hsiao (2012) draw on several studies and note that instructors’ attitudes and acceptance of technology to a large degree determine how successful the use of technology is in teaching and learning. A lack of training and limited institutional support has been reported by informants and has also been identified as barriers to teaching via distance. What participants also reported was tutors’ resistance to use technology, which is also found to agree with other studies (Anderson & Dron, 2010; Power & Gould-Morven, 2011).

**Audiovisual communication**

Synchronous video enhanced dialogue seems to affect the identity of instructors and learners because it could facilitate involvement/discussion in online environment. Educators maintained that the value of SVC is dialogue and audiovisual cues.

Bower (2011) draws on the work of other researchers and maintains that discursive interaction adjusts the direction of the online session while providing the opportunity for students and teachers to engage in knowledge construction processes. Audiovisual communication could give the opportunity for more timely and clear exchange of messages than asynchronous communication.

Voice and vision, according to the data collected, give a touch of liveliness to the construction of the online teaching persona. Audiovisual cues influence perception and emotional contagion. Walther’s social information processing theory (Walther, 1992) assumes that educators could adapt their self-presentation in mediated environments. However, users may not always be consciously aware of technological distortions. In the case of video communication, the amount of delay may or may not be noticeable at a “conscious level” (Powers, Rauh, Henning, Buck & West, 2011, p. 1652). Unconsciously though, technological implications or lack of digital skills could influence negative perception about the teaching identity (Powers et al., 2011). Audiovisual cues affect emotional contagion (Pentland, 2008; Christakis & Fowler, 2009). “We tend to synchronize our facial expressions, vocalizations, and postures unconsciously and rapidly and as a result we also meld our emotional states” (Christakis & Fowler, 2009, p. 37). Audiovisual information seems to create the contextual aesthetics of SVC, which can affect the instructor’s online profile.

Instructors engaged with SVC, have the opportunity to develop the ability of prosopognosia; a term used for the ability all humans have to read audiovisual cues and respond accordingly. Christakis and Fowler (2009) and Pentland (2008, 2010) based their assumptions on the so-called mirror neurons system, an area of the brain that imitates facial expressions of others and feels like others (empathy).

**Professional salience**

In the same wavelength, some SVC informants are enthusiastic early adopters, sometimes with limited institutional technical support, who use their creativity to face the music, so as to come a step closer to their students and build an identity that makes their work more effective and rewarding through dialogue. In a respondent’s words: “If you haven’t met these students and know a bit about them, marking, it just becomes automatic task-ploughing through masses of anonymous scripts, when you know the students, then their work speaks to you in a meaningful way” (Baxter, 2012a, para. 24). Some studies (Hrastinski, 2008; Baxter, 2012a) and SVC respondents have shown the same need for a “human touch” and personally meaningful learning (Parchoma, 2005). Despite the fact that informants can exchange e-mails and telephone calls with their students, this seems to infer that seeing the person somehow makes interactions more qualitatively significant (Baxter, 2011, 2012a).
Many studies (Baxter 2012a) claim that working fully online, the instructors have to create a new identity and enhance their “sense of self salience or feeling of efficiency, self-confidence and motivation.” Likewise, most of the educators interviewed pointed out that they need self-efficacy, confidence with technology and pedagogy to be motivated to engage more with synchronous media.

Figure 2 shows that tele-teacher presence potential affects the identity of the educators and the institutional authenticity. Identity could be influenced by the instructional design, interpersonal skills & shared academic expectations, professional salience, audiovisual communication, digital literacy and attitudes toward technology.

**Tele-Cognitive Presence**

Cognitive Presence is the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse (Garrison, Anderson & Archer, 2000). Tele-cognition was defined as embodied because of the audiovisual cues that SVC could provide while the participants are interacting, talking and seeing each other. In the framework of SVC, respondents acknowledge the effect of audiovisual cues.

As depicted in the diagram (figure 3), the questions asked were based on how SVC affects the learning process and the presentation of content. The learning process seems to be effective for problem base/case study approaches to explore, connect and apply new knowledge by mimicry of the thinking and appearance of experts, the demonstration of practical skills, and active participation through dialogue. SVC seems to be useful for revision and reflection purposes. As far as the content presentation is concerned, contents need to be displayed in limited time, a smaller chunk of information without losing connectivity with the students, through dialogue and audiovisual cues. The content of presentation emphasizes the mindful presence of participants rather than specific information display that could be delivered asynchronously as well. The cultural background of the student target group needs to be taken into account in the instructional design of synchronous video-mediated meetings.

**Problem based approach**

Some educators use SVC to implement problem based pedagogy, situated learning and case studies during real time sessions. They discuss case studies with their students with the purpose of enhancing their critical thinking and dialogue skills. Problem based learning can be linked closely to the Community of Inquiry model which uses exploration, integration and resolution as indicators of cognitive presence (Garrison et al., 2000).

**Mimicry of thinking, behaviors & social signaling**

Imitating the expert’s thinking with audiovisual communication and emotional contagion is a part of the learning process that was depicted in the data collected. The same argument is maintained by Lakoff (2008), who states that senses do not reach only our feelings, emotions and aesthetic sense, but intellect as well. For example, Allmendinger (2010) explains that gestures in particular can provide “cognitive support” aimed at conveying information that is helpful for understanding information presentation and discourse.

Baxter’s (2012a) findings are in agreement with the informants of SVC study as far as the concept of embodiment is concerned. Baxter highlights the importance of body language as noted on research quotes, claiming that mirroring behaviors and reactions visually helps instructors to cope with the different voices/identities without “losing the plot.”
Another aspect of the research outcomes is focusing on the impact audiovisual communication has on learning. Dr. Pentland directs the Human Dynamics Laboratory and the Media Lab Entrepreneurship Program, which helps develop international applications for new technologies. His research team has a lot to say about audiovisual cues called "honest signals." According to Pentland and the MIT research labs, honest signals are gestures, voice tones and body language that affect communications and trigger responses (Pentland, 2010). This perspective undoubtedly impacts the development of communication technologies such as videoconferencing.

**Revision & reflection**
Informants mentioned that they use synchronicity to revise syllabus units and reflect on what they have done. Sometimes they organize workshops to better prepare students for exams.

**Practical skills: assigning roles & mindful engagement**
SVC seems to work effectively for teaching and learning practical skills, which is not taken into account in the CoI model. Educators interviewed often used it in the medical field, language learning or examination techniques. Assigning roles and learning procedures are the reported uses.
Russell and Shepherd (2010) underline two fundamental design criteria for online role-play platforms in universities to create a space for complex social learning, support explicit reflection and theorizing as part of the role-play activity. The sense of place/space for interaction was emphasized by informants as well and it was called “stage” by Fayard (2006).

Regarding procedures and simulations, the visual element and the live, real time experience was a factor usually reported by the respondents. According to Fjermestad, Hiltz, and Zhang (2005) students who connected abstract science to real-world problems through simulations, microcomputer based laboratories, and video gained better results than students who experienced only traditional instructional methods. The brain practices actions, even when we observe others, as if we were doing them ourselves (Iacoboni, 2009). Pentland explains that watching somebody move, a part of the brain that corresponds to the same movement lights up. Christakis and Fowler (2009), Pentland (2008; 2010) and SVC informants agree about the audiovisual effects on cognition. For example, teaching foreign language skills or medical procedure could be beneficial to have some real life, audiovisual simulations.

Content presentation

As far as content presentation is concerned, there are specific limitations that need to be considered. Based on research data, online sessions have to be limited in time and normally could not last as long as face-to-face classes and transmit smaller chunks of information. They demand orchestration and are labor intensive for instructors). Pre-session and after-session activities seem to add value to the content presentation, although video-enhanced meetings seem not to be very efficient for lecturing. The research informants rarely use it.

Likewise, due to the limited time of online meetings, limited time is available for content presentation. Informants maintained that connectivity with the students’ needs to be sustained to promote further engagement and to provide social cues for the instructor while talking.

Body-mindful presence is the content more than power point-slides, as a form of dialogue with social signaling and audiovisual cues. Screen sharing, power slides, videos are features available but the mindful presence of instructors and learners is what makes the difference.

SVC has the potential to be mindful learning, which can be identified with consciousness, the mental state of being fully in the moment. It is acting and adapting thoughts and behaviors in a changeable environment and conversations. Langer in her book *The Art of Mindful Learning* maintains that “At every moment in a mindful state, we are learning something, we are changing in some way, we are interacting with the environment so that both we and the environment are changed” (Langer, 1997, p. 137). Furthermore, she goes one step forward to claim (Langer, 1997, p. 64) that mindful engagement increases liking for learning activities and people involved. Mindfulness is defined as a “heightened sense of situational awareness and a conscious control over one’s thoughts and behavior relative to the situation” (Marsano, 2003, p. 65).

Intercultural differences in learning style were reported by research informants as an important factor affecting the learning process and content presentation of SVC. Culture can be conceptualized as “shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations” (House, Hanges, Javidan, Dorfman & Gupta, 2004, p. 15).

Tele-Social Presence

The same groupings of ideas were used for tele-social presence but it was related more on audiovisual environment and embodiment.
Tele-social presence is the projecting of identities in the tele-operational environments which, when used effectively, could create a "stage" for social interaction (figure 4). Creating a sense of place where online meetings are arranged with the purpose to promote group cohesion seems to be the role of tele-social presence.

Tele-social presence presupposes embodiment, which enriches participation with social signaling that SVC could depict; gestures, head-nodding, smiling and sharing of facial expressions. SVC, despite missing eye contact, the sense of touch and collocation, includes significant parts of body language that provide the sense of the human element in distance education. Informants concur with Huang and Hsiao (2012) who maintained that being present, asking, smiling, and nodding usually gives a sense of togetherness and potentially “bring people closer.” However, audiovisual presence depends heavily on the quality of the device and software used. Togetherness and social network cohesion increase sharing and information exchange, which also influence motivation, participation and job satisfaction (Pentland, 2008).

**Sense of place and togetherness**

Research participants often used the theatrical metaphors to describe the online environment: on stage, the show is live, actors /audience, contextual aesthetics, the climate of interactions on stage, appearances, and the tone of voices. From their responses it could be assumed that a sense of trusting environment, a sense of place have to be created to make online participants come closer to each other and express themselves freely.

**Audio visual and embodied cues**

Audio visual cues called social signaling seem to influence social bonding, group coherence which could lead to sharing and thus learning (Pentland, 2008, 2010; Christakis & Fowler, 2009). Social learning theories are based on social bonding and group management (Wenger, 2006). The audiovisual cues and emotional contagion seem to play a role to the social presence of instructors and students as they build their online identities and cooperate on line, as informants have emphasized.

**Togetherness as immediacy and intimacy**

Immediacy was defined as timely open communication and instructor’s feedback that seem to be valued by all research participants. The tone of voice or an indifferent predisposition could affect the psychological distant participants’ experience. Immediate feedback could lead to better understanding, especially for learners with difficulties.

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*Open Praxis, vol. 6 issue 3, July–September 2014, pp. 245–256*
Categorization of Contextual Factors

Contextual factors could be summarized into three categories, based on factors affecting both students and tutors and factors related to students and instructors separately. In the first category, all participants may be influenced by technological implications (connectivity), synchronous tool choices, time zone differences (very early or very late), institutional support, type of knowledge (conceptual, practical etc.) and contextual aesthetics. Contextual aesthetics as a topic was brought up by three participants as the way instructors and students appear on screen (the way they dressed, their tone of voice, their appearance and movements, etiquette) and the distortion effects that can affect learning, impressions and perception.

On the one hand, educators’ academic expectations, teaching style, pedagogy, professional salience and confidence with technology are recognized as important determinants of learning process. On the other, students’ self-motivation, attention span in front of the monitor, level of task difficulty, language fluency, cultural background and personality traits are enlisted as factors affecting the community that communicates synchronously.

Tele-proximity

The research findings were compared with current literature to formulate a theory of praxis. The CoI framework was expanded to include synchronicity and the (teacher, cognitive and social) presences were redefined to incorporate a new understanding called Tele-proximity. Tele-proximity is online embodiment that explains how instructors and students are connected in synchronous networked environment via tele-operations. It consists of tele-teacher, tele-cognitive and tele-social presences with their specific aspects. Audiovisual cues seem to influence the learning and teaching experience by creating a different context, “a theatrical stage” for learners and educators to perform. The practical implications of the theory are to aid educators/instructional designers and administrators to make informed decisions on what, how and why to use synchronous video enhanced communication and to continue the scientific dialogue on the potential of synchronous video-enhanced technologies in distance education.

References


Open Praxis, vol. 6 issue 3, July–September 2014, pp. 245–256


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Emerging Technologies Acceptance in Online Tutorials: Tutors’ and Students’ Behavior Intentions in Higher Education

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Abstract
Tutors’ and students’ intentions to use emerging technologies (ETs) in e-learning systems in higher education institutions are a central concern of researchers, academicians, and practitioners. However, tutors’ and students’ intentions to use ETs in e-learning systems in distance learning are relatively low. The goal of the study, developed in Universitas Terbuka, was to investigate the factors that may affect tutors’ and students’ intentions to use ETs in online tutorials.

A Web-based survey was designed to empirically assess the effect of the aforementioned constructs on tutors’ and students’ intentions to use ETs in online tutorials. The statistical analysis results showed that the theoretical model was able to predict instructors’ and students’ intention to use ETs in online tutorials. However, not all three independent variables showed significant relationships with the dependent variable. Results of MLR analysis was consistent on technology competencies (TC) as having the greatest weight on predicting instructors’ and students’ intentions to use ETs.

Keywords: emerging technologies; online tutorial; technology acceptance model

Introduction
The incorporation of emerging technologies (ETs) in education is an acknowledgement of the profound influence technology has on all aspects of human life, and there is a critical need for all individuals to develop at least minimal levels of understanding of technology and what it means for their lives (Custer, 1995). ETs and their potential to foster unique types of learning have become a special issue in the last two years. ETs refer to tools, concepts, innovations, and advancements that are utilized in diverse educational settings to serve varied educational purposes, and that can be described as evolving organisms existing in a state of “coming into being” (Veletsianos, 2010).

The development of sophisticated computers and technology in general has changed the essence of distance learning delivery. The programs mentioned in the developing countries, particularly in Indonesia, are intended to ease the shortage of teachers. These programs have been around for more than 25 years in the Open University of Indonesia (Universitas Terbuka/UT). Universitas Terbuka (UT) is a 45th state university in Indonesia which provides distance learning, particularly for in-service teachers, workers, and fresh high school graduates (Zuhairi, Wahyono & Suratinah, 2006). UT was established in September 4, 1984 as a one of the Indonesian Government’s national strategies to improve participation in higher education. In 2012, UT enrolls more than 650,000 students, residing in different parts of the country; most of them are working adults.

UT has the challenge to provide educational quality excellence at a distance for students who have different levels of economic capacity, access to information and communication technology (ICT) facilities and limited ICT literacy (Zuhairi, Adnan & Thaib, 2007). Therefore, UT provides online services to support students’ learning. The services include online counselling, online tutorials and, more recently, an online examination system. According to Zuhairi et al. (2007) the provision of learning support systems is crucial in making students successful in distance learning.
This research explores tutors’ and students’ behavioral intentions as factors affecting their use of emerging technologies in their distance learning and how these behavioral intentions reflect changes in their educational beliefs and actual learning practice. It is believed that teachers are the important persons in changing the educational world, particularly in the learning and teaching processes. On the other hand, students might perceive the value of emerging technologies for improved learning differently and fail to understand the role of technology in transforming their courses (Bessier, Kurt & Reinhart, 1997).

The specific research questions addressed were:

1. To what extent does emerging technologies reaction (ETsR), emerging technologies understanding (ETsU) and technology competencies (TC) contribute to tutors’ and students’ intention (behavioral intention—BI) to use emerging technologies in online tutorial?
2. Which construct out of the three independent variables (ETsR, ETsU, or TC) provides the most significant contribution to tutors’ and students’ intention to use emerging technologies in online tutorial?

The main goal of this study is to empirically investigate the contribution of tutors’ and students’ ETsR, ETsU, and TC to their intention to use emerging technologies in distance learning, as measured by the weight of their contributions to the prediction of BI. A secondary, but related purpose of this study is to identify, from the tutor’s and student’s perspective, the key factors that encourage or inhibit tutors and students to embrace emerging technologies in online tutorial. Thus, the relevance for the current study was that it investigated factors that contribute to tutors’ and students’ acceptance of emerging technologies that has been developed specifically to respond to current demands of open and distance learning.

This investigation may make a useful contribution to the growth and development of strategies that might help higher education institutions introduce online education programs that speak to the specific needs and interactions of their teachers and students. Thus, the significance of the current study lies in investigating key constructs that are contributing to tutors’ and students’ intentions to use emerging technologies in distance learning. As a result of the information provided by these findings, tutors and students in higher education institutions will be able to accommodate emerging technologies into curriculum reform to embrace distance education as a valid delivery method. Furthermore, the appropriate emerging technologies will be refined and developed to support tutors and students training programs as a result of the findings of this study. The findings of this study could also be used in broader studies focused on the instructional emerging technologies that integrate ICT into learning support materials for designing effective distance learning process.

**Literature Review**

**Theoretical Foundation**

The objective of this study is to uncover the important factors affecting the tutors’ and students’ behavioral intention (BI) to use emerging technologies (figure 1). In order to provide a solid theoretical basis for examining the important antecedents for ETs usage, this study integrates the classification of technology competence levels from Tomei (2005), learning and training evaluation theory (Kirkpatrick, 1998) and two important streams of literature under the structure of the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975): the technology acceptance model (TAM) (Davis, 1989; Davis, Bagozzi & Warshaw, 1989) and the theory of planned behavior (TPB) (Ajzen, 1991). It also uses the diffusion of innovations theory (Rogers, 1995).
Integrating technology into the learning process encompasses more than teaching basic computer literacy or using technology for collaboration and decision-making. Lawrence Tomei (2005) developed a classification for technology levels to correspond with the taxonomy levels of Bloom’s taxonomy. Tomei includes six progressive levels for classification of objectives, and includes specific verbs to activate thinking and learning at each level:

1. **Literacy**: this level is the minimum degree of competency expected of teachers and students with respect to technology, computers, educational program, office productivity software, the Internet, and their synergistic effectiveness as a learning strategy;
2. **Collaboration**: learners are able to employ technology for effective interpersonal interaction such as word processing, desktop publishing, email, and newsgroups;
3. **Decision-making**: helps the learners to use technology in a new and concrete situation to analyze, assess and judge via technology through spreadsheets, brainstorming software;
4. **Infusion**: learners analyze available technology, and identify, harvest, and apply technology to learning strategies;
5. **Integration**: learners create new technology-based learning material; and
6. **Tech-ology**: learners are able to appraise, argue, judge, assess, compare, and defend the universal impact, shared values, and social implications of technology and its influence on teaching and learning.

This study explores issues and concerns relating to the pedagogical uses of certain emerging technologies for learning across the curriculum—particularly distance learning. Within the classification of technology domain proposed by Tomei’s taxonomy and the technology acceptance evaluation model proposed by Kirkpatrick (1998), there is a need of a paradigm shift beyond the acquisition of tools (i.e., literacy), their use for communication (i.e., collaboration) and decision-making if tutors...
and students want to get the benefit of a greater access to technology. A review of the literature has suggested that the integration of technology into teaching and learning is typically affected by the following four factors: teachers’ technology skills, teachers’ technology beliefs, teachers’ perceived technology barriers (Hew & Brush, 2007) and “authentic experiences” (Brush & Saye, 2009).

Kirkpatrick’s model provides a strong basis for examining factors that contribute to users’ (teachers and students) acceptance of technology. Kirkpatrick’s model represents a sequence in which technology acceptance can be evaluated. A meta-analysis by Alliger, Tannenbaum, Bennet, Traver and Shotland (1997) examines the results of 34 studies that yielded 115 correlations among the four levels of training evaluation. The researchers augmented Kirkpatrick’s model by further dividing reactions into affective reactions and utility judgments. Affective reactions reflect how much the trainees liked or enjoyed the training. Utility judgments reflect the perceived usefulness of the training. Utility reactions had a significant correlation with learning (r=0.26). Reaction measures that combined affective and utility measure also correlated significantly with learning (r=0.14). The way in which Kirkpatrick (1998) and Alliger et al. (1997) perceive the learning process will be used in this study.

Kirkpatrick and Kirkpatrick (2006) describe the four levels of learning in their evaluation model as representative of a sequence of ways to evaluate instruction and learning support material. Kirkpatrick suggests that with each progressive level, evaluation becomes more difficult, but more useful information is obtained (Kirkpatrick, 1998).

Level 1: Reaction. Reaction may be defined as how well learners like instruction and instructional material or parts thereof. According to Kirkpatrick and Kirkpatrick (2006) learners’ initial reaction to instruction will influence the quality and quantity of learning that takes place. Kirkpatrick (1998) emphasizes that a positive reaction may not guarantee learning, but a negative one will almost certainly preclude it. How much they enjoy it, and how easy and understandable they find it, will be reflected in affective expressions of general satisfaction (Alliger et al., 1997), which will cultivate a positive attitude towards instructional material.

Level 2: Learning. Kirkpatrick considers learning as change on an intellectual level, namely increasing knowledge, developing or improving skills and changing attitudes (Kirkpatrick, 1998). Alliger and Janak (1989, p. 331) defined level 2 as “principles, facts, and techniques understood and absorbed by the trainees.” According to Kirkpatrick no change in behavior will occur without learning. Learning can also refer to which principles, facts, elements and techniques were understood and absorbed by learners (Clementz, 2002).

Level 3: Behavior. It is regarded as the extent to which change in behavior has occurred because the participants attended the training program (Kirkpatrick & Kirkpatrick, 2006). True learning can be considered to have taken place when knowledge and skills learned in one domain are applied in another situation (Osman & Hannafin, 1992). The implication is thus that change in behavior is constituted by demonstrated transfer and application of knowledge, skills and attitudes in new situations (Kirkpatrick, 1998). According to Kirkpatrick, behavior cannot be changed unless learners’ have had the opportunity to demonstrate it. He also claimed that it is impossible to predict when a change in behavior will occur. Change can take place at any time, ranging from immediately after the intervention to a situation where it may never happen. However, behavior can only be changed if transfer of knowledge has taken place (Kirkpatrick, 1998). To assess this level, an evaluator must determine whether participants’ new knowledge, skills, or attitudes transfer to the job or another situation, such as a subsequent course.
Level 4: Result. It refers to the achievement of goals of training in terms of reduced costs, higher quality, increased production and lower rates of employee turnover and absenteeism. It is not possible to evaluate “results” as it is difficult to measure and is hard to separate from another variable. The fourth level could refer to assessing how students perform on the job after graduation.

As such, the first two levels are the most often examined by trainers and researchers because they are more immediate and are often easier to measure. Therefore, this study will focus on exploring the utility of the reaction and learning measure, and the third level will also be examined to get better and detail evaluation. Due to time limitations, level 4 will not be investigated.

In TAM, behavioral intention is determined by attitude towards usage as well as by the direct and indirect effects of two system features: perceived usefulness and perceived ease of use (Davis, 1989, 1993). The value of TAM in technology-adoption research has been consistently important and widely accepted (Szajna, 1996; Venkatesh & Davis, 2000). However, as E. M. Rogers (1995) argues, diffusion of innovative technology is highly related to communication channels, individuals, organizational members, and social system in addition to the technology itself. It is clear that technology acceptance could only be partially explained by TAM since both human and social factors should also be incorporated and considered simultaneously (Chen, Fan, & Farn, 2007). Therefore, together with TAM, TPB is selected to provide a necessary theoretical premise for the research model examined in this study.

Technology Acceptance

a) The first factor identified in the literature as a possible contributor to intention to use technology was emerging technologies reaction (ETsR). The term of “emerging technologies reactions” is created to define specific perceptions and attitudes on emerging technologies. In this study, I assume emerging technologies reactions as somebody’s instant response to emerging technologies during the learning process. The responses can be negative, positive or neutral. This concept is similar to technology perceived enjoyment, which is defined as the degree to which the activity of using technology is perceived to be enjoyable in its own right apart from any performance consequences that may be anticipated (Davis, Bagozzi & Warshaw, 1992). Within the framework of the TAM, they recommended that perceived enjoyment is similar to intrinsic motivation which drives the performance of an activity that is not linked for any reason other than the process of performing the activity per se, whereas extrinsic motivation refers to “the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself” (p. 1112). They found that usefulness and enjoyment were significant determinants of behavioral intention.

According to Alliger et al. (1997) to assess “reactions” is to ask users how they liked and felt about training. In addition, reactions were emotionally based opinions or instant response. Alliger and Janak (1989) suggested that reaction measures that directly ask users about the transferability or utility of the training should be more closely related to other criteria than would reactions measures that ask about “liking.” Alliger et al. (1997) have broken reactions into two basic components, affective and utility reactions and they also combined these components into third component. The first component, reactions as affect, referred to liking of using emerging technology. For example, “I found this emerging technology to be enjoyable” is a typical reaction item. The second component, reactions as utility judgments, attempted to ascertain the perceived utility value or usefulness. It is made operational by asking such questions as “To what degree will this emerging technology influence your ability later to perform your job?”

According to the literatures, although researchers have generally agreed that ETsR plays an important role in technology acceptance among tutors and students, research results have generally
been mixed and additional research as it relates to acceptance of online learning systems is needed (Fuller, Vician & Brown, 2006; Saadè & Kira, 2006). ETsR has also been identified a stumbling block for instructors in integrating emerging technologies into education programs and, according to Yang, Mohamed and Beyerbach (1999), ETsR was one of the main reasons for limited instructor technology acceptance. In addition, many studies have been conducted to assess the factors that influence instructors’ acceptance of emerging technologies (Ball & Levy, 2009; Brill & Galloway, 2007; Bruess, 2003; Kamia Ali & Hafez, 2010; Oncu, Deilialioglu & Brown, 2008). Although research to investigate the students’ intention to use technology has been accomplished (Bhrommalee, 2011; Edmunds, Thorpe & Conole, 2012; Luan & Teo, 2011; McCaslin, 2009; Pynoo, Devolder, Tondeur, Braak, Duyck & Duyck, 2011; Teo, Luan, Thammetar & Chattiwat, 2011), further investigation is needed to reveal the ETsR on students’ intention to use ETs in online environment. Thus, the contribution of ETsR to instructors’ and students’ intention to use ETs in online tutorial is important as an area of investigation.

b) The second factor identified in the literature as a possible contributor to intention to use technology was emerging technologies understanding (ETsU). Emerging technologies understanding is a component of learning that is indexed by results of traditional tests of declarative knowledge. Alliger et al. (1997) incorporated three subcategories of learning: knowledge that is assessed immediately after training, knowledge that is assessed at a later time, and behavior demonstration assessed immediately after training. This study only used the first and second category. Immediate post-training knowledge is usually assessed by multiple choice test responses, answers to open-ended questions, listings of facts and so forth. Knowledge retention is assessed at a later time rather than immediately after training (Alliger et al., 1997). Emerging technologies understanding in this study is also assumed as the way users of ETs understand and enhance their knowledge of ETs in educational contexts. My study refers to self-efficacy with regard to ETs—the confidence shown by tutors and students in their own ability to utilize these ETs in online tutorials—which possibly influences perceived ease of use and acceptance of ETs.

Research generally suggested that ETsU was a significant direct and indirect contributor to individuals’ intention to use technology (Agarwal & Karahanna, 2000; Compeau, Higgins & Huff, 1999; Compeau & Higgins, 1995; Havelka, 2003). Thus, the contribution of ETsU to instructors’ and students’ intention to use ETs in online tutorial is crucial as an area of investigation.

c) The third factor identified in the literature as a possible contributor to intention to use technology was technology competencies (TC). This study uses the term of technology competencies (TC) to describe the user’s experience with, ability to select and apply, and capacity to explore information and communication technology (ICT), especially with computers, to solve problems. There are several ways in which computer experience can be defined and conceptualized. In general, computer experience can be considered to be an act where users engage in applications that are often centered on computers. In addition, computer experience also can be defined in two different ways: as perceived use and variety of use. “While perceived usage refers to the amount of time spent interacting with a microcomputer and [the] frequency of use, variety of use refers to the importance of use and the collection of software packages use” (Igbaria, Guimaraes & Davis, 1995, p. 109). Essentially, the computer would often be a tool for wider and more diverse use. Users are increasingly using computers for information retrieval, data analysis, programming, word processing, creating graphics, and communicating using electronic mail or online conferencing.

Technology competencies also incorporated transferability to emphasize the on-the-job skill performance. According to Alliger et al. (1997) a measure was classified as “transfer” whenever it appeared that the measure was not only taken some time after training, but that it was in fact some
measurable aspect of job performance. For example; work samples, work outputs, and outcomes. Behavior that was retained and applied to the workplace was considered transfer (Alliger et al., 1997).

There was a consensus among researchers that technology competencies (TC) played a significant role in technology acceptance (Taylor & Todd, 1995; Thompson, Compeau & Higgins, 2006; Venkatesh, Morris, Davis & Davis, 2003). Thus, this study investigated the contribution of TC to instructors’ and students’ intention to use ETs in online tutorial.

Behavioral Intention (BI) is a measure of the strength of one's intention to perform a specified behavior (Fishbein & Ajzen, 1975). A motivational perspective has also been widely used to understand individual behaviour. It can be defined as the degree to which people believe that using a particular system would enhance their job. In more wide definition, motivation can be described as the force which propels us in anticipation of intrinsic or extrinsic rewards of benefits. Davis et al. (1992) found that intrinsic motivation (enjoyment) and extrinsic motivation (usefulness) were key drivers of behavioral intention to use computers. The intrinsic motivation factor (enjoyment) not only had a positive effect on the extrinsic motivation factor (usefulness), it also had a positive effect on the intention to use information technology (Atkinson & Kydd, 1997; Venkatesh, 1999).

Methodology

In order to address the specific research questions noted above, an online survey instrument was adapted from the Brush, Glazewski and Hew (2008) instrument to measure pre-service teachers’ technology skills, technology beliefs, and technology barriers. The instrument was modified to accommodate the evaluation model of Alliger et al. (1997) and Kirkpatrick (1998), translated into the Indonesian language to provide clear understanding to respondents, and then provided in an online form. In addition, the instrument was evaluated in terms of reliability and validity. The open-ended questions were embedded in the online form to investigate ETs’ barriers and challenges in online tutorial. Behavior Intention (BI) was measured using the instrument developed by Chen et al. (2007) and Ball and Levy (2009). A Web-based survey was designed to empirically assess the effect of the aforementioned constructs on tutors’ and students’ intentions to use ETs in online tutorials. The web-based survey was developed as a multi-item measure using Likert-type scales. Existing validated scales were used to develop the web-based survey.

The study was developed on February 2013. The target population of this study was tutors and students of the Open University of Indonesia (Universitas Terbuka-UT). This constituted 436 tutor participants and 3,385 student’s participants from all of the study program in UT. They were chosen among the population based on the geographic area, the urban and rural areas. Simple random sampling was used as a type of sampling. I collected 159 responses from tutors (126 fully completed), representing a response rate of approximately 36.5% and I collected 1,734 responses from students (1,201 fully completed), representing a response rate of approximately 51.2%. To provide useful and accurate answers to the research questions, the sample used must be representative of the population (Sekaran, 2003). In order to determine the representativeness of the sample, demographic data were requested from the survey participants. The population of all instructors who participated in online tutorial in 2012.1 academic years at the UT consisted of approximately 54.5% males and 45.5% females. The respondents in the final data set were approximately 46% male and 54% female. Similar to the data distribution of tutors, the distribution of the student data collected appears to be representative of the population of students at UT. The population of non-teacher training students at UT consisted of approximately 51.6% males and 48.4% females. The respondents in the final data set were approximately 59.2% male and 40.8%
female. More than eighty-six percent of the population of non-teacher training students at the university were 40 years of age or younger, with 52.5% of the potential participants between the ages of 17–28. Eighty-eight percent of the respondents in the final data set were 40 years of age or younger, with 54% of the population of non-teacher training students at the university between the ages of 17–28. The distribution of the data collected appears to be representative of the population of instructors at the university.

Multiple Linear Regression (MLR) statistical analysis was used to formulate models and test predictive power. A 95% confidence interval was used in statistical analysis. SPSS 19 was employed to analyze the data in this study. ETsR, ETsU, and TC were dependent variable and BI was independent variable.

Results And Discussions

Technology Skills Analysis

Specific technology skills have been identified as a major factor affecting technology acceptance. The tutors in this study in general had high technology skills in communication and information retrieval, but low technology skills in creation. They felt most comfortable using communication and information retrieval technology. They also were fairly confident in their mastery of basic emerging technology operations.

The results from student data are similar to the data from tutors. Students had high technology skills in communication and information retrieval, but low technology skills in creation. They felt least comfortable with the skills associated with creation technology. In addition, more complex technology skills were self-rated lower by student than simple technology skills.

Perceived Technology Barriers

Access to technology involves providing the proper amount and right types of technology in locations where tutors and students can use them appropriately (Fabry & Higgs, 1998). The tutors and students reported similar perceived technology barriers that suggest that the lack of knowledge about technology and the lack of knowledge about ways to integrate technology into the curriculum are the biggest barriers to use technology in online tutorial.

Predictors of Behavior Intention Using Multiple Linier Regression (MLR)

Multiple Linear Regression (MLR) was used to develop a predictive model to measure the contribution of ETsR, ETsU, and TC to instructors’ and students’ intention to use emerging educational technology in distance learning, as measured by the weight of the combined contribution of the three independent variables to the prediction of BI. In order to perform the MLR analysis, an aggregated measure for each construct was created for ETsR, ETsU, TC, and BI. MLR was then performed using these measures. Four methods of selection—enter, backward, forward and stepwise—were used to analyze multiple linear regressions. The overall model for predicting tutor behavior intentions from the three predictors (ETsR, ETsU, and TC) was found to be significant with F(3,125) = 23.489 (p < 0.05). Results indicated that only one of the three individual predictors (TC) was significant (p < 0.05), with a positive regression weight, indicating that BI increased as scores on TC increased. In addition, the positive regression weights for ETsR and ETsU indicated that higher scores on ETsR and ETsU both indicated higher scores on BI; however, neither of these two independent variables were significant predictors of BI. The MLR coefficients are shown in Table 1.
EUT in combination was adjusted $R^2 = 0.351$, or 35.1%. The overall model summary is shown in Table 2.

The weak influence of ETsR on BI for tutors could be due to the fact that tutors are urged to use the ETs in online tutorials; hence perceptions of usefulness are influenced by the institution. It appeared that greater positive reaction to emerging technologies among the students in online tutorials also fostered higher negative reaction in their tutors. Christensen (2002) found that instructor computer anxiety (CA) tended to increase along with the level of technological skill of students. Results also suggested that greater levels of perceived importance of computers in students fostered higher levels of CA in instructors. The finding implies that tutors need some training to reduce their negative reaction more rapidly than the advancing skill level of their students.

Results demonstrated that ETsU was not a significant predictor of behavior intention. The findings on ETsU did not represent the main strength and further did not validate the findings of other researchers—such as Compeau and Higgins (1995); Igbaria and Iivari (1995); Hu, Clark and Ma (2003); Gong, Xu and Yu (2005), and R. Thompson et al. (2006)—that computer self-efficacy (CSE) is an important contributing factor in predicting behavior intention as it relates to technology usage. In addition, Holden and Rada (2011) found technology self-efficacy (TSE) was more beneficial to the TAM than their computer self-efficacy (CSE).

The overall model for predicting student behavior intention from the three predictors (ETsR, ETsU, and TC) was found to be significant with $F(3,1200) = 214.618$ ($p < 0.05$). Four methods of selection—enter, backward, forward and stepwise—were used to analyze multiple linear regressions. Results indicated that only two of the three individual predictors (ETsR and TC) were significant ($p < 0.05$), with a positive regression weight, indicating that BI increased as scores on ETsR and

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**Table 1. MLR Coefficients**

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<thead>
<tr>
<th>Tutor</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
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<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>(Constant)</td>
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<td>2.308</td>
<td>.752</td>
<td>3.067</td>
<td>.003</td>
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<td>ETsR</td>
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<td>.222</td>
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<td>.081</td>
<td>.327</td>
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<td>.188</td>
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<td>.091</td>
<td>.423</td>
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<tr>
<td>TC</td>
<td>.062</td>
<td>.030</td>
<td>.255</td>
<td>2.109</td>
<td>.037</td>
<td>.355</td>
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<table>
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<tr>
<th>Student</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
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<tr>
<td></td>
<td></td>
<td>B</td>
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<td>Tolerance</td>
</tr>
<tr>
<td>(Constant)</td>
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<td>12.356</td>
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<tr>
<td>ETsR</td>
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<td>5.815</td>
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<td>.031</td>
<td>.838</td>
<td>.402</td>
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<td>TC</td>
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<td>.010</td>
<td>.357</td>
<td>8.981</td>
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</tbody>
</table>
TC increased. In addition, the positive regression weight for ETsU also indicated that higher scores on ETsU indicated higher scores on BI; however, this independent variable was not a significant predictor of BI. The MLR coefficients are shown in Table 2. The proportion of the variance in BI that was explained by emerging technologies reaction (ETsR), emerging technology understanding (ETsU) and technology competencies (TC) in combination was adjusted $R^2 = 0.348$, or 34.8%. The overall model summary is shown in Table 2.

Table 2: MLR Model Summary

<table>
<thead>
<tr>
<th>Tutor</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.605&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.366</td>
<td>.351</td>
<td>1.31521</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.591&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.350</td>
<td>.348</td>
<td>1.24485</td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), Competencies, Understanding, Reaction.  
<sup>b</sup> Dependent Variable: Intention.

Although in general students had a high perception of ETsU, this was not a useful predictor of technology acceptance. Indonesian students, who are from a collectivistic society, are dependent on their social group; their individual confidence level and their ETsU were not varied. Therefore, their ETsU did not influence BI. However, based on the interviews with students, the results indicated that students still used alternative ETs (e.g., Facebook, text messengers, Whatsapp) in order to keep up with the courses. Most of the students did not participate actively in online tutorials because of lack of tutor support; participation levels did not associate with ETsU. In addition, when taking online courses, students used search engines a lot in order to obtain more information. They also reported that the e-mails and discussion board in Facebook were very useful in terms of interacting with their peers.

The discovered value of adjusted $R^2$ of student data in this study indicated that the independent variables account for 35% of the accumulated variance. That is, aforementioned predictive constructs ETsR, ETsU, and TC have significant effects on dependent variable BI. In particular, as shown in table 1, weight-wise the impact of students’ TC on dependent variable BI was greatest ($\beta = 0.357$, $p < .001$), followed by ETsR ($\beta = .242$, $p < .001$), ETsU ($\beta = 0.031$, $p > .01$).

**Conclusion**

Evidence from the MLR analysis demonstrated that technology competencies (TC) was the only significant predictor of behavior intentions (BI) among the three independent variables investigated for tutor data. For student data, emerging technologies (ETsR) and technology competencies (TC) were found to be significant predictors of BI.

This study contributes to the body of knowledge of emerging technologies acceptance in online tutorials by constructing a theoretical model introducing new constructs: emerging technologies reaction (ETsR), emerging technologies understanding (ETsU) and technology competencies (TC). The reason for introduction of different constructs in this theoretical model was the complexities of the organizational and social contexts within which instructors and students with varying individual characteristics make their decisions about using emerging technologies (ETs). Consequently, this study is expected to contribute in future research that will study acceptance of ETs.
There are two implications of this study for social change practice at the organizational level. First, the results provide key factors that affect instructors’ and students’ intentions to use ETs. They suggest that UT administrators should consider providing services for instructors and students who want to use ETs. Second, the findings will help the Department of Information and Technology at UT, especially learning management systems developers, to design and develop those systems that will be more likely accepted by instructors and students. Application of the concept of technology acceptance (TA) evaluation instruments should be a standard component of strategies prior to the introduction of new technologies to tutors and students.

References


### Technology Acceptance Questionnaires

**Page 1—Question 1—Choice—One Answer (Bullets)**

<table>
<thead>
<tr>
<th></th>
<th>Please identify the range in which your age appears</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️</td>
<td>17–28 years</td>
</tr>
<tr>
<td>☑️</td>
<td>29–40 years</td>
</tr>
<tr>
<td>☑️</td>
<td>41–50 years</td>
</tr>
<tr>
<td>☑️</td>
<td>51–60 years</td>
</tr>
<tr>
<td>☑️</td>
<td>More than 60 years</td>
</tr>
</tbody>
</table>

**Page 1—Question 2—Choice—One Answer (Bullets)**

<table>
<thead>
<tr>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️ Male</td>
</tr>
<tr>
<td>☑️ Female</td>
</tr>
</tbody>
</table>

**Page 1—Question 3—Choice—One Answer (Bullets)**

<table>
<thead>
<tr>
<th>How many online tutorials are you participating in 2012.1?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️ 1 online tutorial</td>
</tr>
<tr>
<td>☑️ 2 online tutorials</td>
</tr>
<tr>
<td>☑️ 3 online tutorials</td>
</tr>
<tr>
<td>☑️ 4 online tutorials</td>
</tr>
<tr>
<td>☑️ 5 online tutorials</td>
</tr>
<tr>
<td>☑️ More than 5 online tutorials</td>
</tr>
</tbody>
</table>

**Page 1—Question 4—Choice—One Answer (Bullets)**

<table>
<thead>
<tr>
<th>How long have you been participating in online tutorial until semester 2012.1?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑️ Less than 1 year</td>
</tr>
<tr>
<td>☑️ 1—&lt;2 years</td>
</tr>
<tr>
<td>☑️ 2—&lt;3 years</td>
</tr>
<tr>
<td>☑️ 3—&lt;4 years</td>
</tr>
<tr>
<td>☑️ 4—&lt;5 years</td>
</tr>
<tr>
<td>☑️ 5—6 years</td>
</tr>
<tr>
<td>☑️ More than 6 years</td>
</tr>
</tbody>
</table>
Using the scale provided, rate your CURRENT level of technology skills using each of the following emerging technologies (Note: N/A = not familiar with/do not use, 1=poor, 2=fair, 3=moderate, 4=intermediate and 5=advance)

<table>
<thead>
<tr>
<th>Technology Skills</th>
<th>N/A</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send, receive, open, and read email</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use advanced email features (e.g., attachments, folders, address books, distribution lists)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Subscribe to and unsubscribe from a listserv (mailing list)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Audio and videoconferencing (e.g., Skype, Windows Live, YM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instant messaging (e.g., yahoo messenger, ICQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use a search tool to perform a keyword/subject search in an electronic database (e.g., CD-ROM, library catalog)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use advanced features to search for information (e.g., subject search, search strings with Boolean operators, combining searches)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use a search engine (e.g., Yahoo, Lycos, Google) to search for information on the web</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Use a web authoring tool (e.g., Wordress) to create a blog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Format a blog using tables, backgrounds, internal and external links.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Wikipedia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create online pooling/survey</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The questions below are based on emerging technologies that are available in online tutorial. These emerging technologies are communication, information retrieval and creation tools. Communication includes synchronous (audio and video conference, text messenger) and asynchronous (email, discussion board). Information retrieval consists of search engine that search for text, audio, picture, and video (Google Scholar, YouTube). Creation includes text, html (blog and Wikipedia), audio, video and image. Therefore, the emerging technologies (ETs) in this questionnaire refer to these three categories. According to Veletsianos (2010) ETs are: “Tools, concepts, innovations, and advancements that are utilized in diverse educational settings, to serve varied educational purposes, and that can be described as evolving or “coming into being.” (Note: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree).

<table>
<thead>
<tr>
<th>Level of Learning</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt comfortable using ETs for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt comfortable using ETs for retrieving information</td>
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</tr>
<tr>
<td>Level of Learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
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<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>I felt comfortable using ETs for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I would like use ETs for communication</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I would like use ETs for retrieving information</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I would like use ETs for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETs were relevant to my task for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETs were relevant to my task for retrieving information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETs were relevant to my task for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to learn ETs, particularly for communication</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>It is easy to learn ETs, particularly for retrieving information</td>
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</tr>
<tr>
<td>It is easy to learn ETs, particularly for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand ETs and their application for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand ETs and their application for retrieving information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand ETs and their application for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can use the different tools of ETs for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can use the different tools of ETs for retrieving information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can use the different tools of ETs for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will improve my skills to learn ETs for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will improve my skills to learn ETs for retrieving information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will improve my skills to learn ETs for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will teach my colleagues how to use ETs for communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will teach my colleagues how to use ETs for retrieving information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will teach my colleagues how to use ETs for creating (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will always use ETs for completing my task mainly in communication area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will always use ETs for completing my task mainly in information retrieval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I will always use ETs for completing my task mainly in creating something (text, html, audio, video, image)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>Disagree</td>
<td>Neutral</td>
<td>Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>I intend to use emerging technologies in online tutorials as soon as possible</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
<td>m4</td>
<td>m5</td>
</tr>
<tr>
<td>I will use emerging technologies in online tutorials soon after it is available</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
<td>m4</td>
<td>m5</td>
</tr>
</tbody>
</table>

**Page 5—Question 8—Rating Scale—Matrix [Mandatory]**

Perceived Technology Barriers

<table>
<thead>
<tr>
<th>Not a barrier</th>
<th>Minor barrier</th>
<th>Major barrier</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of or limited access to computers in UT</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Not enough software available in UT</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Lack of knowledge about technology</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Lack of knowledge about ways to integrate technology into the curriculum</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>My assignments do not require technology use</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Lack of technology accessibility in my classes</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Too much learning materials to cover</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Lack of mentoring or support to help me increase my technology skills</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>Emerging technologies-integrated curriculum projects require too much preparation time</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
<tr>
<td>There is not enough time in class to implement emerging technologies-based lessons</td>
<td>m1</td>
<td>m2</td>
<td>m3</td>
</tr>
</tbody>
</table>

**Page 6—Question 9—Open Ended—Comments Box [Mandatory]**

Open ended question: “Based on your experiences, do you think online tutorials which have been running so far have met your expectations? Please explain it. What should be fixed if it has not met your expectations?”

**Thank You Page**

If you require further information regarding this survey, please contact me:

Adhi Susilo adhi@ut.ac.id Phone: 021-7490941 (office) or 081399646475 (mobile)

*Open Praxis, vol. 6 issue 3, July–September 2014, pp. 257–274*
Student Teachers’ Attitude towards Twitter for Educational Aims

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Abstract
This paper presents an educational experience with 100 student teachers from different courses of the University of the Balearic Islands (Spain) in which Twitter is used for various different activities. The aim of this experiment was to explore student teachers’ perceptions in order to value their attitude towards Twitter for educational aims. Afterwards, students were asked to write down their reflections on an eportfolio. Data was collected from their eportfolio evidence, which was analysed to review their attitude towards the use of Twitter for educational purposes and for their future teaching and professional development. The conclusions indicate the need to conduct different educational activities in which Twitter is used in various ways. In addition, conclusions reflect on the real impact of Twitter on students’ learning enhancement, in order to improve student teachers’ attitudes towards social media in education. Therefore, this article contributes to the body of existing research on the use of technology in education, specifically to the possibilities of the use of social media and microblogging in Teacher Education.

Keywords: microblogging; PLE; social media; student teachers' attitudes; Teacher Education; Twitter

Introduction
Teachers’ attitudes are paramount for the successful integration of technology in schools (Teo, 2008; Teo, Lee & Chai, 2008; Teo, 2009). Hermans, Tondeur, Braak and Valcke (2008) argue that earlier experiences highly influence teachers’ attitudes and beliefs. It seems relevant to try to change student teachers’ attitudes and beliefs towards technology in education, following Hermans et al. (2008) who say that these are defined even before the future teachers start their education, in order to avoid resistance to technology in their teaching (Matrosova Khalil, 2013).

Two main groups of barriers have been defined for technological integration (Ertmer, 1999; 2005; Ertmer & Ottenbreit-Leftwich, 2013, p. 177). First of all, the barriers that are external to teachers, which have been called first-order barriers, and that are “resources, training and support.” Secondly, the internal barriers, which have been called second-order barrier, consist of “attitudes and beliefs, knowledge and skills.” After important efforts to overcome first-order barriers and having observed persistent difficulties for innovative integration all over the world, currently second-order barriers are considered crucial (Ertmer & Ottenbreit-Leftwich, 2013).

Therefore, the current paper aims to contribute to the field of student teachers’ attitudes towards technology and the social media for educational aims. To that end, an educational experience with a concrete microblogging tool, Twitter, is described.

Twitter in Education
Twitter has been considered one of the most powerful microblogging platforms in education (Grosseck & Holotescu, 2008), which can be defined “in terms of devices and technologies, but also in terms of learning mobility and participants to this process, a form of mobile-learning” (Holotescu & Grosseck, 2009a, p. 495).
Since 2006, when Twitter was launched, it has become the most popular microblogging system (Holotescu & Grosseck, 2009b) and numerous teachers around the world have introduced it in innovative educational activities (Castañeda, Costa & Torres Kompen, 2011).

A review of the literature on Twitter allows us to observe its beneficial aspects and limitations. Among the beneficial effects of Twitter, the following have already been demonstrated:

- Student engagement and positive impact on learning and final marks (Junco, Heiberger & Loken, 2011).
- The relationship between teachers’ use and collaboration and, students’ engagement and outcome improvement (Junco, Elavsky & Heiberger, 2013).
- Inclusion of real-world examples and enhancement of discussion, creation of new ideas and collaboration (Kassens-Noor, 2012).
- Transformation of learning processes through microblogging with mobile devices (Holotescu & Grosseck, 2011).

Limitations can be summarised as follows:

- Unfamiliarity with Twitter and the great number of tweets not related to education that can overwhelm students (Lin, Hoffman & Borengasser, 2013).
- Issues for the integration of Twitter into Learning Management Systems (LMS) and to enhance Personal Learning Environments (PLEs) (Conole & Alevizou, 2010).

Wheeler (2014) has recently commented on Twitter that it has provided him with the “best continuous professional development” he has ever had. This is in line with the idea of lifelong learning supported by the PLE concept. The PLE concept refers to the construction of a virtual environment in which the learner is at its centre, connecting tools and services, networking, etc. for learning processes (Adell & Castañeda, 2010; Attwell, 2007). PLEs have three components consisting mainly of three activities: reading/accessing information, creating/reflecting by doing, and sharing/interacting with others (Adell & Castañeda, 2010; Castañeda & Adell, 2013). Concerning their relation with Twitter, this latter would be included in the final group as a microblogging platform to share links with others and create a personal learning network, but has also been considered as the heart of the PLE (Simoes & Mota, 2010). The main aim for pre-service teachers is to become lifelong learners (self-directed learning) and reflect in and on their teaching practice so that they “can, in turn, empower their own students” (Masters, 2013, p. 8).

Thus, it seems that there is an important line of research that focuses on Twitter as a powerful tool for Teacher Education. In recent years, there has been some interesting research that focuses on the role of Twitter for both pre-service and in-service Teacher Education for reflective thinking (Wright, 2010) and collaboration (Smith Risser, 2013; Lewis & Rush, 2013). Moreover, limitations have been observed in Teacher Education such as:

- Some resistance by teachers to using Twitter, since they regard it as distraction, especially in the case of teachers who work with non-adult students (Lin et al., 2013).
- Difficulties to use mobile devices for microblogging have been detected because of teachers’ attitudes towards mobile technology (Wright, 2010).

The Experiment

Description

This experiment is based on a learning activity with Twitter for a discussion assignment in initial teacher training in order to empower student teachers’ PLEs, motivate the use of Twitter
with educational aims so that students develop a positive attitude towards the social media in education.

At the University of the Balearic Islands (UIB), in many Teacher Education programmes, students are introduced into educational topics through technology. The development of the curricula includes tasks enhanced by technology, and throughout the programme, students are asked to document the learning processes on their eportfolios. Therefore, in two different Balearic Islands (Mallorca and Ibiza), Twitter was used in a debate activity on different educational topics.

Students in Mallorca were invited to use Twitter during the whole semester in order to share their learning tasks on their eportfolios. And in both islands, students carried out a discussion activity in which Twitter was introduced to extend the debate. In the case of Mallorca, the debate topic was on social networks and their relationship with education. Students were asked to take the role of teachers who believed in the use of the social networks in education. In the case of Ibiza, the discussion topic was on traditional versus constructivist education and student teachers participating in the experimental activity were asked to document their learning through the debate on their eportfolios and also with the use of Twitter, since it was introduced into this activity at the end of the programme.

So, the debate activity was designed in two phases: prior to the face-to-face session, students were asked to dedicate a week to preparing the topics of discussion on Twitter. Students were assigned roles and they had to change them midweek so they had to prepare opinions for and against. The second phase of the use of Twitter was during the face-to-face debate where they had to discuss in class and they could also use Twitter to extend the debate. To develop the debate on Twitter some hashtags were negotiated with students.

A short introduction on Twitter was needed in order to help students from Ibiza to use the microblogging platform for the debate activity. In the case of the students from Mallorca, who were already using Twitter during the course, a brief reminder of the use of Twitter was given in order to empower their participation in the debate. After the description on a technical level, students were recommended to follow each other and also some people related to education so they could better understand the sense of Twitter. No other sessions or explanation were needed although peer-support was promoted to overcome difficulties.

Figures 1 and 2 show some screen captures from the debates (in Catalan).

**Participants**

There were three graduating classes participating in both the educational activity and the study, based in two different Balearic Islands, from different education programmes:

- A group of 68 students doing the third year of Primary Teacher Education at the UIB in Mallorca headquarters.
- A group of 15 students doing the first year of Primary Teacher Education at the UIB in Ibiza.
- A group of 17 students doing the first year of the Masters Programme on Secondary Teacher Education at the UIB in Ibiza.

Thus, the total sample consists of 100 students.

**Methodology and Research Questions**

In this experiment, we wanted to focus student teachers’ perceptions on Twitter from quantitative and qualitative perspectives. Therefore, the research is based on mixed paradigms since it has been claimed that both can be equally necessary to address educational studies at different stages (Curtis, Murphy & Shields, 2014). In addition, the study is carried out from an interpretative point...
of view, as the main research aim is to understand students’ attitudes towards technology and the social media in education.

The main research questions of this study were:

- What are students’ perceptions on Twitter for educational aims?
- What are students’ perceptions on Twitter for their future teaching?

To explore these questions, we mainly used the technique of content analysis in which we analysed the eportfolio evidence on Twitter by students. Content analysis is “a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding” (Stemler, 2001). These categories were centred on the main research questions stated previously.

As for the eportfolio evidence, in the case of students from Ibiza, these were asked to reflect on their learning in a Twitter-based learning activity. However, in the case of students from Mallorca, they were asked to reflect on their learning from the debate as part of a workshop of social networks carried out during the course. They also had to write an eportfolio piece of evidence at the end of the course in order to evaluate their PLE (designed through Symbaloo) and specifically their tools for connecting with others (among them, Twitter). The topics considered by students are also analysed to see if students show a positive or negative attitude towards the educational use of Twitter.

**Instruments**

Although content analysis of eportfolios was the main technique for the collection of information, a questionnaire for general data collection was also used. This questionnaire focused on general information about students and their use of social media and Twitter.

*Open Praxis*, vol. 6 issue 3, July–September 2014, pp. 275–285
Qualitative data was collected through content analysis of student teachers’ eportfolio evidence on the use of Twitter. For such analysis, some categories were drawn up according to different topics for reflection:

- Students’ enjoyment of Twitter and its usefulness.
- Previous difficulties or negative attitude towards Twitter.
- Reflection on the possibilities of Twitter in education.
- Reflection on the possible impact of Twitter in their future teaching or professional development.

Other topics were also highlighted, such as the use of Twitter for information management or the unexpectedness of using Twitter as part of a learning strategy.

**Data Collection and Analysis**

A total of 54 students answered the questionnaire—13/54 from the Degree course in Primary Teacher Training (Ibiza), 31/54 from the Degree course in Primary Teacher Training (Mallorca headquarters) and 10/54 from the Master’s Degree in Teacher Training (Ibiza)—, while there were 100 students who documented the learning activity on their eportfolio (figure 3). According to the data of the questionnaire, the participants were generally young as 37/54 of students were under 24 years old and 10/54 were between 28 and 32.

It is important to bear in mind that creating an eportfolio piece of evidence for this learning activity with Twitter was compulsory for students in Ibiza, while in the case of the students of Mallorca, they were asked to produce two eportfolio pieces of evidence that might or might not include a reference to the use of Twitter (it was not specified).

![Figure 3: Number of Participants in the Questionnaire and the Eportfolio Evidence](image)

Almost all the students who participated in the questionnaire had a social media account 52/54. The most common social media services were: Facebook (98.1%), Twitter (84.6%), Tuenti (28.9%) and, Pinterest (7.7%). The students’ main uses of Twitter were: following famous people (22%), connecting with friends (21.1%) and connecting with people of interest to them for their profession (20.2%).

Data collected from the content analysis of the eportfolio evidences, according to each topic, are presented in number of students—due to the small size of the sample—in table 1.

*Open Praxis*, vol. 6 issue 3, July–September 2014, pp. 275–285
In order to interpret the data shown in the table, some considerations should be taken into account. There are important differences between the courses from Ibiza and the one from Mallorca in relation to the reference to the different topics analysed. This is mainly due to the differences in the use of Twitter in each case, the educational design carried out, specified in Table 1.

Most students in Ibiza, who used Twitter in a short and concrete activity, showed a positive attitude towards Twitter after having used it in a discussion activity. Therefore, the majority in Ibiza (25/32) admit to having enjoyed Twitter, even considering that an important part of the group (15/32) had started with previous negative attitude or technical difficulties. Thus, half of the group is able to observe the possibilities of Twitter in education. However, only a minority of the students (2/32) contemplated the inclusion of the tool in their future teaching. It is important to highlight that students who do not demonstrate positive opinions towards the topics do not do so because they have a negative attitude but mainly because they do not mention the topic. So, while none of the students did not enjoy the activity, 7/32 did not make any reference to the topic; and, while only 1/32 did not agree with the potential of Twitter in education, 46.9% did not show any opinion at all.

Students in Mallorca, who used Twitter during the whole semester and for a wider range of activities, showed a rather more neutral attitude because they did not reflect as much on the topics considered; so, positive items obtain lower percentages and, negative items are found in similar percentages to Ibiza. Thus, only a very small part of the group of students in Mallorca admit to having enjoyed the use of Twitter (11/68) even considering that they started with fewer difficulties than in Ibiza (only 2/68 admit negative attitudes and technical difficulties); also a reduced part of the group reflect on the positive use of Twitter for education.

Since the group of participants is not particularly large, it is very difficult to deduce patterns from data obtained. However, there are some aspects that can be taken into account for further exploration. First of all, the group in Ibiza, which worked on Twitter during a short period of time,
encountered more difficulties (15/32) in the usage of the tool at a technical level than students in Palma (3/68), who used Twitter during a longer period of time. This seems rather relevant for educational implementation as future repetitions of the activity may need to consider a more prolonged usage of Twitter in order to give students time to overcome technical difficulties and any feelings of anxiety derived. Secondly, it is important to observe that despite the difficulties, students were able to see its value in educational settings. Data obtained reveals the same quantity of students who felt difficulties and who valued Twitter as a learning resource (15/32). Future investigations could attempt to explore the possible pattern between these two aspects. Thirdly, the group who carried out a longer activity with Twitter during the semester (the group in Palma), shows coherent beliefs between the affordances of Twitter in their own learning and in education and the future usage in their in-service teaching. Thus, nearly the same number of students considered both of them in positive terms (19 and 18 out of 68 students) and only three of them considered the matter in negative terms (more than a half of the group did not consider the topic in their final written reflections). Lastly, it is also worth highlighting that more students, among those who worked with Twitter in diverse ways, are positive about the usage of Twitter in their future teaching (18/68) than students who used it exclusively in the debate activity (2/32). Students who used Twitter for a long time are in year four, so it seems obvious that they are especially sensitive about the imminence of their professional careers. Nonetheless, it would be interesting to observe if a diverse use of Twitter may have influenced students’ beliefs about its possibilities for their own future as teachers.

On the other hand, the final reflections of the students showed that Twitter was considered as part of their PLEs since they included it in their Symbaloo—tool used throughout the course to show graphically their PLE—(figure 4) or it was part of the graphical representation (figure 5).

All in all, actually, what seems more significant is the difference between students in Ibiza and in Mallorca about their future teaching, as has been observed above. Students in Ibiza had an opinion generally more in favour of Twitter for educational aims than students in Mallorca, but on the contrary, the great majority of students in Ibiza (30/32) did not reflect on the possibilities of transferring the current learning experience to their future teaching and professional development, whereas there were some Majorcan students who did reflect on this issue (18/68). There are some aspects that might have influenced these results:

- the type of activity in which students were involved,
- the fact that students in Ibiza were in their first year at University and students in Mallorca were in the third,
the topic of the debate for Majorcan students: specifically on the relationship between social networks and education, or
the characteristics of the courses (while in Mallorca the course was of educational technology, in Ibiza the courses were centred on didactic aspects).

The following comments (translated from Catalan) illustrate how students reflect on each item on their portfolios, similar in the students from both islands:

“As I have already said, I didn’t like the tool to share my own opinions at all, but I have to say that my view of Twitter has totally changed. I have seen its possibilities to share my opinions with other people” (Student 3)

“From this course, I have started to use Twitter to follow several experts on the use of ICT in educational settings and this has provided me with learning through direct links to interesting articles, useful resources or interesting blogs related to the main topics of their Twitter accounts” (Student 6)

“I have realised that Twitter has many possibilities in general and in education. It enhances the process of knowing, expanding, and sharing of both teachers and students” (Student 7)

“I don’t think I will be able to use Twitter with my future Primary students because they are too young to use the social media, and even if they were, their parents wouldn’t agree to it” (Student 9)

“It was not difficult for me because prior to the start of the course I had already used Twitter. But I was surprised at integrating Twitter in an academic context, as I had not stopped to think I could do the functions that were carried out throughout the course” (Student 10)

“Personally it was an experience that I really liked because it is a different method of sharing your work with other people, and for me, much nicer and easier to use than some others. I think it helped me to think seriously about the fact of using these methods in my future as a teacher. I think it offers extra motivation and provides ease when presenting work, also to find and share information, etc.” (Student 62)
Discussion

First of all, considering the main aim of empowering student teachers’ PLE with Twitter for educational aims, this can be considered to have been carried out successfully as all students used the tool. However, the aim of improving their attitude towards the social media in education has only been partially achieved as results on content analysis indicate. The type of activities chosen to introduce Twitter has been that appreciated by Kassens-Noor (2012) as optimal for discussion and collaboration and sharing.

Data obtained cannot allow us to observe a high probability of Twitter usage in students’ future teaching. So, although having observed that students did not have issues related to first-order barriers, such as hardware limitations; and, having also overcome possible issues related to digital competences, a generally positive attitude of students is not clearly appreciated. Therefore, these results cannot confirm that early experiences may influence students’ attitude as Hermans et al. (2008) have claimed. It does not align either with conclusions of previous research by Tur and Marín (2013) where most students showed a positive attitude after the use of eportfolios in their learning process.

Not all students in some groups were highly engaged with the use of Twitter for educational aims. These results would partially confirm those of Junco, Heiberger and Loken (2011). However, the difference in attitude raises some unexpected issues. It seems that the type of activity can have influenced students’ perceptions, so further research should control this fact as a dependent variable.

Concerning the integration of Twitter in student teachers’ PLEs, as reported by Conole and Alevizou (2010), Twitter can be appreciated on the Symbaloo tool (students in Mallorca) and map minds (students in Ibiza) to represent their PLE. The unfamiliarity with Twitter has not been an issue for the successful use of Twitter as Lin et al. (2013) have suggested. This fact was probably due to initial technical training before starting the educational activity, and also because some students had already used Twitter or were frequent users.

Some limitations can also be observed from the data obtained. There was a small part of the group of participants involved who admitted not considering Twitter for their future teaching because of the age of the students they will work with, which align with the results by Lin et al. (2013).

Conclusions

The use of the social media for educational activities is a relevant field of educational technology that still has a long period of evolution. The challenge is, often, for the students to go beyond the informal context and see these social tools as key tools for their everyday work, and especially for their future teaching, in the case of student teachers. When student teachers eventually become teachers, the generations that they will teach will be people that live seamlessly between the virtual and real worlds, using diverse social tools. Therefore, it is important to work in different educational designs that enhance the use of social media in Teacher Education, and work on student teachers’ attitudes towards technology in education.

This study is our contribution to this area and, although it has important limitations such as the size of the sample, it also offers opportunities to work on through future research. Further research should consider if the length of the activity and the way in which it is conducted influence students’ engagement and results. Also, future experiments should measure the real impact of Twitter on students’ learning process. It is important to address student teachers’ attitudes and engagement, but deeper studies are also needed to assess the real impact of Twitter on learning enhancement, as claimed by Junco, Elavsky and Heibenger (2013). Moreover, further implementations of Twitter with educational aims should be addressed to enhance self-regulated learning, as claimed by Cho
and Cho (2013). Finally, it would be of great interest for future implementation to include mobile devices in a more organised way in order to see the possibilities for the transformation of teaching processes, as claimed by Holotescu and Grosseck (2011).

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Virtual Mobility in Higher Education. The UNED Campus Net Program

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Abstract

We present the UNED Virtual Mobility Campus Net Program, implemented since 2012 in collaboration with European and Latin American universities. Program’s objectives, participating institutions, procedures, and evaluation are exposed. Virtual mobility is understood as a meaningful strategy for intercultural learning by studying an undergraduate or postgraduate degree program at the local, national or international level, in relation to the student’s own studies, utilizing virtual or distance methodology; virtual mobility is also the possibility of studying specific topics or a determinate number of credits or courses. The equality of opportunity is a priority objective for UNED. The diversity of students’ personal situations necessitates formulas that, along with traditional in-person mobility (e.g., Erasmus Program), utilize virtual resources to guarantee for all the students the intercultural experience of living in an academic environment different than one’s own. We hope that the UNED Campus Net Program is of interest to readers and that we can incorporate new partners into the project over the next few years.

The article deals with three main dimensions of the UNED Campus Net: objectives, implementation process and participants’ evaluation. We aspire to discuss and improve this experience in cooperation with other institutions interested in implementing virtual mobility in higher education.

Keywords: blended learning; distance learning; higher education; international students; intercultural learning; virtual mobility

Virtual Mobility. What and Why?

In the context of Higher Education, mobility can be defined as a meaningful strategy for intercultural learning by “the movement of educators, students, or administrators as well as that of training courses, programs and research across national and geographical barriers using the following formulas: in-person, distance, virtual or a combination of these.” Virtual mobility is understood as the possibility of studying an undergraduate or postgraduate degree program at the local, national or international level, in relation to the student’s own studies, utilizing virtual or distance methodology; virtual mobility is also the possibility of studying specific topics or a determinate number of credits or courses (European Students’ Union, 2010; Weber & Hemming, 2012).

This vision of mobility places the focus of our actions on four basic dimensions:

– The physical or virtual relocation of students, professors, administration and services staff, and researchers to institutions in other countries.
– The availability of joint study programs.
– Joint and collaborative research.

As regards UNED, ensuring the equality of opportunity is one of the university’s stated objectives. UNED has made access to higher education feasible for people who otherwise would have been unable to access it, be that due to income, place of residence or any another personal situation. Many of UNED’s students divide their time between work and university training. Its programs
become the second opportunity for many citizens who, at one stage and for a variety of reasons, did not gain admittance to conventional higher education.

Since the nineties, multimedia systems have been incorporated into the traditional modalities of radio and television, both in the development and distribution of materials. Digital systems and the Internet have made it such that, at present, the “distance” between UNED and its students has disappeared: every student has the entire university at his or her study table, only a “click” away on the computer’s keyboard. UNED’s current motto is “Wherever You Are.” This refers as much to a student’s geographical location as to his or her life and professional circumstances (Aguado, Malik, Monge, Pra & Díaz, 2010). Today, UNED is a major institution: with its more than 260,000 students, it is the largest university in Spain; it has an educational offering comprising 26 undergraduate degrees, 43 master’s degrees, more than 600 Continuing Education programs, the teaching of 12 languages, more than one hundred summer courses and nearly 400 University Extension activities.

In this context, UNED continues to make the equality of opportunity its raison d'être and remains committed to offering its students all the educational experiences characteristic of the university. These include, among others, the opportunity to undertake studies in other international universities, carrying out the mobility utilizing the blended learning model. Like any other university, UNED participates in the Erasmus Program and other in-person mobility programs. However, conscious of the diversity of students’ personal situations, we are committed to virtual mobility as an indispensable formula to guarantee for all students the international and intercultural experience of sharing and living in an academic environment different than one’s own and to do so in an international environment (Aguado & Monge, 2013). Our hope is that the European Commission Program, Erasmus for All/Erasmus + (2014–2020), includes virtual mobility amongst its offerings and takes into account the experience of programs such as the one herein presented (Monge & Donado, 2012).

This has been the principal motivation for devising and setting into motion the UNED Campus Net virtual mobility program herein presented. This document discusses the background of said program, the creation and setting into motion thereof and the proposals for improvement based on the undertaken evaluation.

**Uned Campus Net: The Program in Action**

The program begins with the preparation by UNED of a first international virtual mobility project, which is submitted for funding to the Spanish Ministry of Education (Campus of International Excellence Program in 2010).

**Objectives**

The UNED CAMPUS NET program aims to meet the teaching and learning needs of students within the institutions of the European Higher Education Area and the Ibero-American Knowledge Space (EIC) in terms of intercultural learning and international mobility, providing formulas that overcome the barriers of geography and time, and thereby expanding the possibilities to ensure the equality of opportunity for the students of all participating institutions.

More specifically, its objectives are to:

- Encourage debate and the exchange of experiences and knowledge on procedures aimed at improving virtual mobility between CAMPUS institutions.
- Establish a virtual mobility program at the level of undergraduate studies among said institutions.
- Consider the basis of a program of master’s and doctorate joint degrees and/or dual degrees.
The experience was initiated in 2011 from UNED’s Office of the Vice President for Internationalization and Cooperation (Aguado, 2012), the body which, as has been pointed out previously, had been working for years on the formulation of a virtual mobility model (García-Aretio, Álvarez & Ruiz, 2008; Ruiz Corbella, Álvarez & Collado, 2011). In the last two academic years (2011–2013) about one hundred students have participated in the program.

**Participating Institutions and Coordination**

Although, as noted in the previous section, the invitation to participate in the project initially included more institutions, it was quickly considered more opportune, from the functional and organizational standpoint, to begin working with a group of four institutions in a pilot program. This would allow for the development of the basic tools to subsequently include other participating partners. From here the pilot working-group formed by the following institutions was established:

1. National Autonomous University of Mexico (UNAM)
2. Fern Universität of Germany
3. Open Universiteit of the Netherlands
4. Universidad Nacional de Educación a Distancia (UNED)

Some criteria are common to all of them. First, they offer programs based on on-line education. Second, they must have sufficient capacity to incorporate undergraduate students through the modality of virtual mobility. Finally, they are able to enter into and develop an institutional commitment that responds to the needs of the program. The Campus is governed by agreements signed between the institutions. New universities can be added to the agreement after its signing and can be included in one or more academic networks. The institutions have an exchange policy based on reciprocity.

UNED is the institution through which networked action is carried out. The Campus is organized around two types of coordination: a) Institutional Coordination, each institution establishing and maintaining relations with other institutions in the network; b) Academic Coordination, serves as a liaison between the faculty, students and the central coordination of the program.

**Requirements for Students and Academic Offerings**

The only requirement is that students be enrolled at the university of origin during the current academic year. Here, we must stress that institutions are free to set their own eligibility criteria; however, these cannot go against the basic principles of the program. Students may enroll for a minimum of one course and a maximum of two, which can be taken in the same or in a different institution. In the last two Calls (UNED, 2012a; 2012b), the four institutions offered more than 60 subjects within the framework of the three academic networks of Education, Psychology and Law.

The teaching delivery language is the original of each institution, although course offerings in English are promoted at all the universities. The student will need to demonstrate a sufficient knowledge level of the language. In the first call for UNED CAMPUS NET, courses have been offered in four languages: Spanish, German, Dutch and English; the latter being the language in which UNED and Fern Universität offered several courses.

**Registration and Fees Policy**

Registration must be performed at both institutions, such that students manage the registration in the course that will be recognized at their home university, paying the fees if such case is applicable. At the same time, and through the institutional coordination of the course, registration is performed at the host institution. The program is governed by the principle of exemption from
payment of fees for students registered in the virtual mobility program. Students shall pay the fees corresponding to the courses for which they will register at their home university. Their registration at the host university will always be free of charge. This principle is essential to prevent inequalities created by the different pricing policies that exist between countries, which might distort the principle of equality of opportunities among students.

**Recognition of Studies**

Virtual mobility within the framework of CAMPUS NET ensures recognition by the home institution of the credits undertaken at the other institution. Nevertheless, it must be noted that this recognition is done on an individual basis and in accordance with the criteria of each institution. That is to say, CAMPUS NET makes a series of recommendations, but institutions act in accordance with their own rules. As an example, we note that UNED draws inspiration from the physical mobility agreements of the ERASMUS program, instruments known by the different actors involved in the mobility process, and therefore, easy to assume.

**Evaluation and Suggestions for Improvement**

The experience accumulated during these two years of implementing the program allows us to assess what has been achieved and to establish improvement proposals for the future. The evaluation is derived from: a) the views of the one hundred participating students and the twenty professors involved; b) the identification of problems arising from the management of the program itself.

**What students have told us about their experience**

The students participating in the UNED calls for virtual mobility for the 2012/2013 academic year have sent us their feedback about their experience by answering a questionnaire including these six questions: who they are, why they chose to participate, how they describe the experience itself, what they have learned, what were the difficulties and what are the benefits they consider to have been obtained (Del Olmo, Valero, Sarabia & Díaz, 2012).

The reasons that have led students to take an interest in the virtual mobility program are mainly curiosity and an interest in learning about other ways of addressing certain issues and subjects as well as other ways of teaching the subject matter. There is also an interest in interacting with professors and students from another country or continent that speaks a different language and has another view of the issues being studied. At the same time, interest in a particular course is decisive, either because it is not present in the curricula of one’s own country or because it provides an original, different and interesting approach.

“For as long as I can remember, I’ve wanted to study abroad either in Germany or Switzerland. Due to personal circumstances however this seemed almost impossible. The fact that I got married and had children only seemed to distance me more from my dream. However, I was happy that it was possible for me to study Dutch law through the Open Universiteit. During the last summer I heard that the Open Universiteit would collaborate with the Fernuni and UNED to provide an exchange program for students: Campus Net.

Campus Net, you’ve given me a possibility to study at the German Fernuniversität Hagen in Germany, without being away from my family for over six months. Instead of logging in to Heerlen (NL) where the OU is based, I login to Hagen from my own home. Since all the material and the contacts with the FernUni are in German it really feels like an exchange semester even though I can still speak Dutch in my daily routine.”
(a student of OU, the Netherlands at the German Fern Uni)

“...what about exchanging such knowledge and experiences with personnel on the other side of the pond? That is the first thing I asked myself when, to my surprise, I was awarded the SCHOLARSHIP ... Initially you are lost. The computing platform that greeted me was completely different from my well-worn ALF ... Would I be able to navigate within this new environment? What would the course be like? How would the activities be carried out? ... My ability to adapt to a new situation was put to the test.”

(a UNED student at UNAM Mexico)

The doubts at the beginning had to do with this question: Will I be able to navigate in this computing environment that is new for me? One soon realizes that the virtual environment is quickly learned and becomes familiar. One grows aware that the novelty is that of approaches, ways of relating, readings and language.

They all emphasized the different teaching methodology encountered vis-à-vis that which they knew. In some cases, due to the focus on the selection and analysis of articles and texts (UNAM); in others, due to the more active use of virtual media (UNED); and also due to the special attention given to student reception and accompaniment (Fern Uni).

“Professors wanted me to be successful in my studies ... professors are there for me.”

(a student of OU, the Netherlands at the Fern Uni)

Among the learning mentioned is that of adopting other viewpoints and seeing experiences, laws, proposals and specific issues in a different light; and understanding another’s point of view, heeding the codes from which the ideas, laws and facts derive meaning. That is the most significant learning, which always involves recognizing the differences in language, prior knowledge, schedules and expectations as stimuli to enable us to live and navigate in an international environment.

“As far as my professional point of view is concerned, I think this exchange semester is a valuable addition to my studies. I will have some basic knowledge of legal German and the German law and I know where I have to go to get answers to my questions, find out more about certain topics or where to find the required jurisdiction. This knowledge and these skills are definitely and addition to my resume and my value for the job market in the future. After all, Germany is the number one business partner of the Netherlands. Speaking the language, knowing German and basic legal German law gives me a tremendous advantage when I am ready to take the legal field by storm”

(a law student from OU, the Netherlands at the Fern Uni of Germany)

“The training I acquired has facilitated the preparation of a practical paper on the preliminary study of a Mexican law (the Waste Act) in legal-economic key, which will allow me to expand, at a professional level, other projects in the areas of cooperation and bilateral relations”

(UNED law student at UNAM, Mexico)

What we, the professors, have learned

We are confident, from our own experiences as educators and from the impressions that we have received from our colleagues, that many of the comments listed in the student survey would be seconded by the professors. Yet, there are aspects greatly enriching our own experience that are not confined to the privilege of having students from different native languages and countries; it is the manner in which our curricula, programs and the contents themselves are put to the test in such diverse contexts. Those concepts, processes, and perspectives that we believe to be essential are tested and proven to be less universal or transcendental than we thought; other aspects take on an essential relevance and students’ own contributions introduce dimensions that we could not have imagined.
Collaboration with teachers and administrators of other institutions also opens areas of collaboration, both to expand and combine educational offerings, which are geared towards the creation of joint degrees, as well as to develop international research programs. In this environment it is easier to think up and carry out novel proposals and, in fact, the very collaboration channels used by students are suitable for designing virtual collaborative research methodologies.

Finally, and without an eye to being exhaustive, there is an element of great value: it helps us to break down the barriers and mistrust with regard to the world outside the University and to collaborate in a more fluid manner with the societies of which we are part.

**Difficulties in the management of the program and suggestions for improvement**

As with any new initiative, UNED Campus Net presents many challenges for the institutions participating in the program. Attempting to integrate a new concept such as virtual mobility involves changes in the routines of the organizations, more so if these changes give rise to relations with institutions in other countries or in other languages. Needless to say, the first challenge is that involving high-level institutional commitment, without which the implementation of the program would not be possible. In this case, activation of these commitments was carried out from the departments related to internationalization. Once past this first step, the most important challenges can be divided into two main types:

a) First, the challenges concerning the academic administration of the program:
   - It is essential to have the direct involvement of those individuals in the Faculties who are in charge and that these individuals undertake the work of accompanying and monitoring the virtual mobility students, which may require more attention.
   - Likewise, monitoring by the course teaching staff is crucial, particularly in the early stages of the course, as students must quickly become accustomed to: a different teaching system, an educational platform with other resources and an interaction with new pedagogical and cultural elements. For this reason, this second 2013–2014 Call is designed by UNED to include the mentor figure as support for virtual mobility students.
   - Another fundamental challenge of the program is the assessment policy of each institution and the flexibility of said institutions and their teaching staff to adapt to this model in which the student is sometimes unable to travel.
   - Finally, the recognition of the studies undertaken presents certain difficulties, especially in cases in which the studies are carried out in universities outside the European Higher Education Area and that do not follow the ECTS credit transfer system. This simply requires a more detailed analysis of the course programs and their workload hours.

b) Secondly, difficulties of a technical-administrative nature:
   - Harmonization of the calendars of the different universities participating in the program, especially when it comes to registration and the carrying out of assessment testing.
   - Development of minimum common program management procedures among all the partners. Although CAMPUS NET has advanced greatly in this regard, the interaction between all the consortium partners should be further improved by means of common documents and simple exchange and communication formulas.

**Final Reflections**

One of the most striking paradoxes that arise when comparing conventional or in-person mobility with its virtual counterpart is the manner in which students enrich their experience. In in-person mobility, it is the journey, the change of place which provides them with a richer learning experience,
while in virtual mobility what travels is the knowledge (Weber & Hemming, 2012). Through the students, this knowledge is put to the test in very different social and cultural contexts. That which is taken for a given in one place is not in another; and the students are fully aware of this.

The learning community generated by virtual mobility fosters knowledge that is more collaborative and nuanced than that which comes directly from a professor and master classes. Students access differently designed platforms as well as programs and materials which were not offered to them by their home universities. The form of being a student and professor is different in each institution and/or field; what is expected of us is different from what we usually do. It needs to be understood and explained to us, which helps us to implement new or lesser-used capabilities.

However, more important in our view, is that virtual mobility links communities of students, as well professors themselves, in learning processes on an international scale, processes that are open to the world and to very different historical, social, political and economic contexts. By definition, this type of learning tears down institutional barriers, contributing inalienably to the "WHEREVER YOU ARE" of UNED as a university for all.

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Open Praxis, vol. 6 issue 3, July–September 2014, pp. 287–293
Capturing the Magic of Classroom Training in Blended Learning

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Abstract

Organizations today are faced with the challenges of expanding their traditional classroom-based approaches into blended learning experiences which integrate regular classrooms, virtual classrooms, social learning, independent reading, on the job learning and other methodologies. Our team converted a two-day classroom-based program, taught from 2010–2013 through the Canadian Organization Development Institute (CODI), into an on-line offering. We used several leading edge technologies, without sacrificing the power of face-to-face training. In this article we will highlight the lessons learned and the best practices that ensured the program’s success.

Keywords: adult learning; blended learning; interactive; virtual classroom

Introduction

Due to financial and time constraints as well as the emergence of powerful online learning technologies, organizations are being challenged to incorporate learning opportunities into the actual work environment, while not compromising the effectiveness of face-to-face training.

With this challenge in mind, our team designed and implemented an on-line offering of a successful face-to-face professional development program entitled “The Essentials of Organization Development and Change,” originally designed by Marilyn Laiken.

Our team consisted of three very experienced educators—Jon Wagner and Russ Milland in on-line learning, and Marilyn Laiken in classroom education. We all felt that our past experience with remote/virtual learning was not inspiring, with e-learning designers tending to reproduce traditional lecture-style education, replete with “talking heads” and “death by PowerPoint” (Federman & Laiken, 2010).

Could we really recreate the dynamic environment of an experientially-designed training program? By “experientially-designed” we mean that the learning environment incorporates as many basic adult learning principles as possible that are grounded in years of well-supported research.

Current Research Underlying our Design

Kurt Lewin’s classic Theory of Experiential Learning (Lewin, 1951), defines four discrete operations needed to actually learn a skill that can be “applied in action,” the only kind of learning truly useful in a work situation. These are:

1. Concrete Experience (participating in an activity)
2. Reflective Observation (sharing reactions and discussing observations)
3. Abstract Conceptualization (making generalizations and developing principles)
4. Active Experimentation (applying the learning to new situations).

Active Learning (“learning by doing”) is an essential element. Learners may receive a demonstration or instructions prior to applying the learning themselves. At other times they might be asked to...
experiment first, and then reflect on the experience and draw conclusions from it. Either way, the learner must be actively involved in the learning process.

To complicate this notion even further, people have different learning styles (Kolb, 1984) that need to be accommodated. For example, some learn more effectively by experimenting first, and then being exposed to the theory. Others are just the opposite.

In a review of the literature, there was absolutely no data supporting the notion that e-learning with verbal presentation only is sufficient for effective integrated learning (Zelinka, 2011). However, many articles support the use of hybrid methods (face-to-face classroom or on-site learning, combined with an e-learning approach) and the use of multiple methods of presentation.

Halpern and Hakel note that “Substantial practice during training under varied conditions promotes long term retention and knowledge” (Halpern & Hakel, 2003, in Zelinka, 2011, p. 1–2). This is supported by Burke et al. (in Zelinka, 2001), who say:

In fact, when the relative effectiveness of training methods as presented in the literature was re-analyzed and categorized according to learner participation in the learning process, the results, based on 95 studies and in excess of 20,000 participants, indicated that that the most engaging methods (hands-on training)…were approximately twice as effective as the moderately engaging methods (programmed instruction, feedback intervention), and approximately three times more effective than the least engaging methods (lectures, pamphlets, films, videos). Learners were also able to recall and reproduce more of the material (after the same period of time) as training became more engaging (p. 1–2).

**Basic Principles of Adult Learning Underlying Our Design**

Finally, the basic principles of adult teaching and learning, as shown in Table 1: *Basic Principles of Adult Learning*, are the foundation of a successfully designed classroom learning environment (Laiken, under review). It is these principles that we believe create the “magic” in experiential classroom education.

Based on these principles, the question we posed to each other was: “How can the many years of research on how adults learn be applied with the use of technology, so that the cyber learning milieu is as dynamic, personal and collaborative as the classroom context can be in the hands of a skilled adult educator?”

In order to respond to that question, we present here a case study—the transformation of the “Essentials” program to a dynamic blended learning experience, using an Adobe Connect Pro platform for the virtual classroom, as a core component.

<table>
<thead>
<tr>
<th>ADULT LEARNING PRINCIPLES</th>
<th>APPLICATION TO PROGRAM PLANNING</th>
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<tbody>
<tr>
<td>* Learning needs to be meaningful and relevant to the learner. The learner needs to see “what’s in it for me” to feel committed and involved.</td>
<td>* Encourage expression of needs, interests; provide opportunity to relate content to personal experience; establish learning goals relevant to the learner’s needs.</td>
</tr>
<tr>
<td>* Learning can only occur with the agreement of the learner.</td>
<td>* Encourage learners to trust themselves, and assume responsibility for their own learning.</td>
</tr>
<tr>
<td>* Learning is aided by cooperation, collaboration and support.</td>
<td>* Develop activities that encourage interaction with others and build trust among group members. Encourage learners to recognize and use mutual resources.</td>
</tr>
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The Essentials of Organization Development and Change—A Case Example

The two-day, face-to-face version of this program was designed as a highly interactive introduction to the essentials of Organization Development (OD).

The specific objectives of the program were to answer the following questions:

1. What is OD? (roots)
2. Who am I as an “instrument of change”? (roles)
3. How is it done? (research in practice; action research)

These “3 R’s” of O.D.—Roots, Roles, and Research in Practice were taught in the classroom through a combination of small and large-group discussion, short presentations, personal reflection using a self-scored inventory, and experiential activities, including a case study which provided a step by step experience with an “action research” model (O’Brien, 1998). The activities were supplemented by a reading list and handouts for further reference.

Approach to Converting from Face-to-face to Online

We used Wagner and Milland’s (2014a) six-step approach to convert the program and design the revised on-line offering:
1. **Review Learning Objectives:** We reviewed and revised the learning objectives, determining which of these would be best accomplished and tested in a virtual classroom, and which would lend themselves to other blended learning components.

2. **Reorganize content:** We then redistributed the content to various media, and allocated appropriate virtual classroom content to interactive sessions of 2 hours each.

3. **Make it visual:** We inventoried and repurposed existing visuals, adjusting and expanding them to virtual classroom functionality (video format, size, and so forth).

4. **Add interaction:** We inventoried and repurposed existing interactive components, incorporating ad hoc interactions, converting long open-ended assignments into short interactions, and adding frequent relevant interactive activities.

5. **Introduce the Virtual Learning Environment:** We started with existing introductory exercises, adding a new virtual approach to ensure both social presence and mastery of the virtual learning environment.

6. **Inventory and convert supporting materials:** Finally, we reviewed materials to ensure “fit” with the new structure, simplified handouts into one resource guide, reviewed and revised leader’s guides and participant materials, and made undocumented interactions explicit.

### The New Program Architecture and Specifications

The 2-day program was reconfigured into a 7-part blended learning experience with the components shown in Figure 1: *Architecting the OD Essentials into a Blended Learning Environment*.

![Figure 1: Architecting the OD Essentials into Blended Learning](image)

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1. **Reference Guide**: A reference guide was developed, which brought together all materials including a welcome letter, pre-work and pre-readings for each module.

2. **Module 0**: We added a front-end Module “0” which introduced participants to the technology and interactive features so that the first class was productive, and technical issues were resolved for individuals prior to the official start.

3. **Modules 1–6 (Virtual Classroom Sessions)**: Six 2-hour virtual classroom sessions were developed to be highly interactive, to help participants internalize the content that was delivered in the readings and activities assigned between sessions. Adobe Connect Pro was used as the technology platform for the classes.

4. **Assessment**: Paper-based assessments from the original program were converted to automated spreadsheets for quick analysis. Assessments were completed between sessions. Results were shared in small group discussions online.

5. **Role-Play**: We used specially designed screen layouts, which allowed the role-play participants to see each other and work with visual as well as aural cues.

6. **5-Part case study**: New information was revealed to participants online for each segment of the case study, at the appropriate time, to enable them to work in virtual break-out groups and report results. The facilitator then shared what happened in reality.

7. **Slides, polls and poll results, slide decks and chat session logs** were sent to participants immediately following each session.

8. **Recordings**: Sessions were recorded for subsequent participant review. This allowed those who missed a session to catch up.

9. **LinkedIn (private) learning community discussion group**: Work between the sessions was made more interactive by having participants discuss certain issues and topics in an online discussion group, and then continue discussions later in the virtual classroom.

**Challenges**

- **For the facilitator, a key challenge was an inability to see non-verbal participant responses.**

  We realized how much we depended on these cues for feedback. We needed to find other ways to solicit that information. Ways we did this included “water cooler” session introductions and “check-outs” at the end, as shown in Figure 2: Water Cooler Checkout, providing open-ended opportunities to express reactions and questions. Polls and ongoing evaluations also solicited participant feedback. This often resulted in changes that improved our original design.

- **Another challenge was how to reproduce in a virtual environment the active exercises that enlivened face-to-face sessions.**

  The Adobe Connect platform was selected for its powerful collaboration tools. One of the best practices for virtual classrooms (see that and 144 other best practices: Wagner & Milland, 2014a) is the 5–10 minute rule. The virtual classroom is most effective when the degree of interaction is very high. The best practice is to ensure that an activity is created that requires participants to engage actively with other participants or the instructor every 5–10 minutes.

  Likewise, in his book *Brain Rules*, Dr. John Medina (2009) also recommends what he calls the 10-minute rule. His research shows that attention drops off dramatically after 10 minutes, and that it is briefly recovered near the end of the session (perhaps because people know it is about to end and a Q&A or summary has started).
In her book, *Better Beginnings*, Dr. Carmen Taran (2009) proposes that if something can be done to “create anticipation” in the first 30 seconds, it buys you 10 more minutes of attention, after which anticipation needs to be created all over again.

The implication of both Dr. Medina and Dr. Taran’s research is that to keep participants engaged, the facilitator must introduce activities that require everyone to interact at least every 5 to 10 minutes.

In that vein, Table 2: *Interactive Adobe Connect Tools*, summarizes the interactive Adobe tools used for the on-line Essentials course.

**Figure 2: Water Cooler Checkout**

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**Table 2: Interactive Adobe Connect Tools**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Uses in the on-line course context</th>
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<tbody>
<tr>
<td>Chat</td>
<td>• Solicit participant input, brainstorm, collaborate</td>
</tr>
<tr>
<td></td>
<td>• Encourage participants to continuously contribute ideas and questions</td>
</tr>
<tr>
<td>Polling in</td>
<td>• Quick visual polls or voting using the annotation tools</td>
</tr>
<tr>
<td>– Adobe</td>
<td>• Use an instant Adobe Connect poll</td>
</tr>
<tr>
<td>– Survey Monkey</td>
<td>• Solicit input prior to workshop sessions</td>
</tr>
<tr>
<td>Emoticons/ Status Options</td>
<td>• Quickly get input—Polling through “Raise Hand,” “Agree/Disagree” emoticons</td>
</tr>
<tr>
<td></td>
<td>• Identify who wants to speak</td>
</tr>
</tbody>
</table>

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Envisioning how to successfully replicate activities in the classroom, such as role-plays and small-group discussions, was a special challenge.

Values Clarification Activity Example: In the classroom version, participants were asked to choose between two polarities for 4 different scenarios. Participants moved over to the side of the room where the statement was that best represented their values; these sub-groups discussed why they chose that polarity on each side of the room, and then reported out their respective perspectives to the whole group.

In the virtual classroom, participants were asked to put their initials beside the polarity with which they best identified on a virtual whiteboard. Participants then discussed their perspective, followed by general comments. The interaction and discussion were equally rich in both contexts.

Role Play Activity Example: In the classroom version of a Role Negotiation activity, a participant described their own current troublesome case scenario using two chairs—one representing what they had said, and the other representing what was said by the person they were addressing. The participant then moved to the chair of the other person. A volunteer would then fill the empty chair and role play what they would say. After several such interventions, the scenario was debriefed, and the participant who provided the case told the group what they might now actually try in this situation.

In the virtual classroom, virtual breakout rooms were used with a special screen layout where the “Consultant” and “Client” turned on their webcams and did the role play, using index cards to indicate who was speaking at any point in time. The observers gave feedback and the program leader participated to help provide further insights. The larger group then reconvened and debriefed their learnings.

- A key question we held was, how do you ensure the participation of every learner remotely?

It is easier to just “lurk” in an on-line setting, yet active participation is a key to integrated learning. So, how to deal with the silences online?

We needed to learn to accept silences not as a lack of interest, but simply part of the on-line milieu. “Round Robin” responses to questions periodically insured that everyone had a “voice” and that participants were still “with” us.
- Another important question was, how does one evaluate the impact of the learning experience?

Each session concluded with a different brief “formative” evaluation. The first session had the participants raise their hands and respond to specific questions. For the second session, we used an anonymous poll. The results and subsequent program adjustments were shared and discussed briefly at the next session. At the end of the third session a “virtual round robin” checkout was used. At the end of the sixth session, a more detailed evaluation of the whole program was completed on-line.

- Finally—how did we manage to stay aligned as a three-person team—a challenge in any team-training environment?

This challenge was exacerbated by the fact that our three team members were also working remotely, hours away from each other by road.

Jon Wagner and Russ Milland brought a wealth of research, experience and best practices in Virtual Teaming to this project. Their approach is described in detail in their book: Building Effective Virtual and Remote Teams (Wagner & Milland, 2011). Marilyn Laiken also contributed many years’ experience in working with face-to-face teams as described in her book: The Anatomy of High Performing Teams: A Leader’s Handbook (Laiken, 1998).

We launched the project with a kick-off face-to-face meeting (“travel for trust”), and subsequently co-developed the vision, objectives and approach virtually, using BEST Practices for Virtual Meetings (Wagner & Milland, 2014b) as our guide.

We then scheduled regular 1 to 2 hour virtual meetings before each online session, reviewing course materials as well as pre and post-session scripts and checklists. We debriefed each class, providing honest feedback on each others’ roles, and reflection on our own performance, making changes where needed.

Summary: Lessons Learned

There are a few key learnings from this experience that could improve future practice, such as:

1. A blended learning environment can be just as, or even more effective and interactive than a 2-day face-to-face workshop. With ongoing reinforcement, participants are more likely to complete all readings and extra work to enrich their learning. Participating in on-line discussion groups with clear guiding questions continually reinforces the learning.

2. It takes much longer to develop blended learning than a classroom experience. The virtual classroom environment is less forgiving than the classroom, and it is more difficult to “go off script” once you are “live” in the virtual classroom. Material needs to be thoroughly tested to ensure the concepts are clear, and the technology works as planned.

Upon reflection, we recommend the following steps for the best results:

(a) Plan a separate Technical Orientation session. We learned from this program that planning a separate technology orientation session may have helped to ensure that the first class would be productive and engaging from the start. We managed to take this opportunity to teach the students how to function in the blended learning environment, and we were able to deal with any technical issues at the same time.

(b) Always include at least two facilitators主持/presenters. We found that in the virtual classroom, it is difficult for one person to play multiple roles (as facilitator, host, presenter,
technical support, for example). Having at least two people involved may free the facilitator to focus more on the teaching role.

(c) **Move content to pre-work and intersession work.** Detailed content is best delivered with readings, videos and audio recordings, requiring reinforcing communication from the facilitators to ensure that people do the work. Once participants experience a session where the content is built upon, they may realize that they need to complete pre-work to enable their full participation.

(d) **Design virtual classroom sessions to be highly interactive.** Applying the 5 to 10 minute rule (as discussed previously) improves engagement. We found that twenty to twenty-five PowerPoint slides is the optimal number for a highly interactive 2 hour session. A maximum time of 5 to 10 minutes between activities is very realistic.

**What would we do differently?**

Overall, we were very pleased with the end product and results, and found that the changes we would make were fairly minor.

We did realize that we did not set clear expectations about the number of sessions that participants could miss, while still being awarded a certificate of completion. In a 6 week program, as opposed to a 2 day face-to-face workshop, it is more likely that participants may miss sessions due to scheduling changes. Available session recordings and individual “meetings” with us helped bring missing participants up-to-date. It became evident that absences could be disruptive to the group dynamics, especially in a fairly small group of participants.

Finally, especially the first time a program is converted, the amount of development time should not be underestimated. A useful research study by Chapman Alliance (2010) suggests that to develop blended learning with highly interactive on-line components, it will likely take four times as long as it may take to develop classroom-based instructor-led training.

However, despite these challenges, all three of us were convinced that, in this case at least, we were able to retain the “magic” of face-to-face classroom learning in our blended learning context—and even improve on it in some important ways. We will certainly do it again!

We’d like to let our learners have the last word. When asked in a post-session on-line survey what they were most pleased about regarding the program, they said:

- “Team discussions through breakout rooms were fantastic”
- “I appreciated the opportunity to participate and contribute, but at the same time have time to absorb the information and concepts”
- “I really appreciated the wealth of knowledge and experience that the facilitators provided to the course. Theory is one thing, but when combined with experience, the product that is delivered is that much better.”

(Final program evaluations, November, 2013)

**References**


*Open Praxis*, vol. 6 issue 3, July–September 2014, pp. 295–304


Open Access in Higher Education–Strategies for Engaging Diverse Student Cohorts

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Abstract

With growth in online education, students gain tertiary qualifications through a mode more suited to their demographics such as work and life balance, learning styles and geographical accessibility. Inevitably this has led to a growth in diversity within student cohorts.

The case study described in this paper illustrates strategies based on informed learning design for educating diverse student cohorts in an online program offered by Swinburne University of Technology. The case, an open-access, undergraduate information systems program, attracts mature age students studying while balancing employment and family commitments. The program’s open-access facet is the “no entry requirements” such as prerequisite studies. Hence, many students enter the program via non-traditional pathways bringing significant differences in experience and consequent skill bases. The program’s innovative pedagogy encourages students to engage via active learning with tailored assessments, interactive communication via discussion boards and facilitated real-time sessions and formative feedback which include audio components.

Keywords: Diversity; e-Learning; higher education; learning design; mature age; open access

Introduction

The case, an information systems program offered by Swinburne University of Technology (SUT) incorporates a systematic and research-led approach to the design and delivery of its units, online and in partnership with Open Universities Australia (OUA) since 2000. OUA is a collaborative venture with several Australian leading universities of which SUT is a shareholder and provider partner. The dynamic between providers sees many online programs being delivered collaboratively, often with different providers contributing to one undergraduate program.

In the information systems program, students gain a technical background in information systems fundamentals such as networking, databases, programming and project management. The expected outcome is that students are able to identify the role and uses of information technology (IT) in order to apply IT solutions to business problems.

Over the past ten years the program’s peer recognised advancements in online pedagogy have encapsulated a series of innovative and traditional teaching elements. These have provided an effective and highly successful online educational environment recognised nationally within Australia (ALTC Program Award, 2010).

Particular emphasis is placed on diversity within student cohorts expected because of the open access facet of the program i.e. “no entry requirements” such as prerequisite studies. According to Stone (2013) those studying through OUA are mostly 25 years or older; are working; have parenting responsibilities; and are often first in the family to attempt study at university level. Therefore mature age students are often balancing work and family commitments with their studies and unable to stop or reduce employment to attend a university campus (Signor & Moore, 2011).

The Australian Jobs 2013 publication by the Department of Education, Employment and Workplace Relations (DEEWR, 2013) reports on current and future projections for Australian
industries and occupations. Interestingly the report highlights the difficulty for graduates to break into the labour market if they do not have work experience however there is no mention of the difficulty faced by many people currently in the workforce who are unable to progress in their career due to a lack of credentialing. Meeting an otherwise unmet need by mature age candidates, the case study supports workers who either desire to credential existing work-based experience or are looking to enhance their career and employability prospects. These aspirations are often anecdotally supported, for example:

“As someone with over 20 years experience in the IT industry, I wished to move to an IT management role. However like many of my fellow colleagues in the industry, I had no formal tertiary qualifications” (Student testimonial, 2010)

Relevant to the requirements of these adult learners is the theory on andragogy which is described by Knowles, Holton III and Swanson (2005) as having several assumptions such as

- adults enter the educational activity with a greater volume and more varied experiences than do children;
- adults have a readiness to learn those things that they need to know in order to cope effectively with real-life situations;
- adults are life-centered in their orientation to learning (Knowles et al., p. 72).

The case study highlights flexible learning and teaching strategies developed in the information systems program to cater for adult learners with different learning requirements focusing on: engaging students with subject matter; approaches for student engagement with educators and peers; providing assessments with active learning components; and providing students with inclusive formative feedback that supports “feed-forward opportunities for... students on their assignments” (Wallace & Moore, 2012, p. 53). This paper elaborates on strategies adopted to support equity and diversity and identifies several gaps in the literature focused on student diversity. Anecdotal evidence of student reactions to some of these strategies is provided however comprehensive evaluation on their effectiveness is not within the scope of this paper.

### Strategies for engaging students with subject content

It is not enough to provide learning material online. Of importance is student engagement with subject content (Leong, 2011). Leong observed that “increasing students’ interest in the subject matter may result in higher quality of online learning experience” (p. 24). Student engagement is encouraged in the case through innovative pedagogical design such as learning objects to foster an individualised approach and facilitated with software tools to demonstrate complex theories. The developed bank of learning objects caters for different learning requirements.

#### Software tools to cater for different learning styles

Static text based content does not suit the learning styles of all students and is likely to struggle in engaging them. Therefore software such as Mimio, Camtasia and Blackboard Collaborate (previously known as Elluminate) has been adopted to provide step-by-step worked solutions to complex problems. Virtual tutorials are developed using Mimio software (an electronic white-board that records voice, images and dynamic text capture). This software allows students to view a pre-recorded white-board presentation of a worked example along with verbal explanations. In contrast Camtasia and Blackboard Collaborate records computer keystrokes, dynamic screen capture and the tutor’s voice explaining concepts.

In recognition of the need to support both students with different learning styles and equity for students with learning difficulties, virtual lectures with video components and text-based transcripts are provided. Student preference for either the spoken and/or written word is catered for. Another
reported benefit is that “students are also able to view the lectures at their own pace, revisiting sections as required” (Signor & Moore, 2011, p. 33).

**Learning objects for individualised learning**

To foster a more individualised approach to enhance student learning, learning objects were adopted into the curriculum. A learning object can be a single file such as an animation, a video clip, a discrete piece of text or URL, or it can be a collection of contextualised files that make up a learning sequence (Oliver, Wirski, Wait & Blanksby, 2005). It is a digital resource that can be identified, tracked, referenced and used for a variety of learning purposes. Learning objects offer a new conceptualisation of the learning process—rather than traditional lectures and tutorials, they provide smaller, self-contained, portable or reusable units of learning presented in manageable segments (Moore & Wallace, 2003).

The transferability of learning objects has proven to be a valuable learning tool for students in the program especially when adjusting for variances in student prerequisite knowledge. For example, learning objects may be reused in advanced units as “refreshers” which is helpful to students who have experienced a lengthy time span since completing prerequisite studies. This portability has also proven valuable when students enter the program with exemptions for prerequisite units. Students may overcome gaps in their knowledge by completing targeted learning objects.

Conversely, learning objects afford students a degree of flexibility to choose which areas within a unit to study as appropriate to their needs since each learning object provides a self-contained piece of information. Therefore, depending on each student’s prior knowledge, they can skip any learning object in which they are already proficient, allowing more time to focus on their areas of need. Students are empowered to take responsibility and ownership for their learning within a structured environment. Development of self-directed learning skills is facilitated; students can complete at their own pace.

Venturing into fully-online teaching, it was realised that content within learning objects had been appropriately developed but there was insufficient focus on collaboration with students. Rather, the program was operating in a *distance mode* i.e. unit content packaged and sent to students who were expected to work independently with minimal collaboration. As a consequence of using this mode it was noted there were a number of students in some units who did not submit any assessments and were subsequently being recorded as “no attempts.”

Upon viewing that student “no attempts” in 2003 averaged 30% across units (a situation not unique to this program but evident in all the university’s online programs), an active attempt was made on improving these statistics in the program’s units; culminating in a reduction to the number of “no attempts” in several units within the program to approximately 13% by 2007. Within the case this result has remained consistent in 2013. It is posited therefore, that the inclusive pedagogical approach outlined in this paper played a significant role in improving these statistics.

Interestingly, research by Greenland and Moore (2014) undertaken at the same university found the average of no attempts across broad discipline units to be 20% in 2012. It should be noted that many of these disciplines have not adopted the pedagogical approaches outlined in this paper.

**Strategies for student engagement with educators and peers**

In accordance with Leong’s (2011) reflections on social presence having “a strong influence on student satisfaction in online learning environments” (p. 6), the information systems program includes strategies to enhance communication and collaboration between educators and students and between peers. Student engagement can be encouraged by inspiring and motivating students...
through interactive communication and overt enhancement of interpersonal skills. Effective protocols for timely communication and feedback were adopted with students to address the risk of isolation and subsequent disengagement of students. A sense of isolation can be particularly prevalent for students living in rural areas or for students who feel their knowledge is inferior to their peers. However, timely and thoughtful communication from tutors and peers can be very effective in alleviating this isolation. Strategies include establishing student and tutor expectations and clear guidelines including netiquette when communicating online (Moore & Signor, 2014).

The program aims to provide an awareness of the contribution of people as a critical component of information systems (Jackson, 2001; 2004; 2010) and the impact information systems have on organisational culture and the broader community. The diverse experiences of students and educators are drawn upon with interactive collaborative online activities such as online discussion boards and online tutorials in order to develop and extend this awareness. Online discussion boards are a form of communication which is asynchronous (like email) where senders and receivers wait, sometimes days, for responses to queries or discussions. Whereas online tutorials are synchronous in that they offer immediate responses in live, online and facilitated sessions.

**Asynchronous Online Discussion Boards**

The online discussion boards used in the program are of particular importance for engaging learners through collaborative discussion. Individual categories are provided for students to post discussion threads and student responses are solicited. Tutors respond to posts in a timely manner (within two days). It was noted within the online classes that some students felt isolated. This presented a challenge for students and tutors. As such the collaboration strategies were enhanced by incorporating several fundamental principles of Wright and Schoop’s (2003) *Student Centered Discussion model*. For example, the simple action of including the student’s name in the thread title when responding (Moore & Signor, 2014). This built a sense of rapport and conversation between the student and the tutor and benefited students by assisting them to find posts relevant to them.

**Synchronous Online Tutorials or Chats**

To emulate classroom participation where immediate responses are the norm, synchronous online tutorials or chats (virtual classrooms) became a regular feature in the program’s units from 2004. Students can come from anywhere in the world and meet each other to discuss concepts as if they are in the same virtual room.

Teamwork and communication skills are facilitated within collaborative settings which enable group discussions that draw from industry experience. The student cohorts in the program are primarily mature age students and as such are recognised for the wealth of experience each student brings with them. As explained by Knowles *et al.* (2005) in the context of adult learning, “prior experience of the learner” is one of the core principles of andragogy (p. 3) and “the richest resources of learning reside in the adult learners themselves” (p. 66). Hence the sharing of experiences as they relate to the subject matter is strongly encouraged. This has resulted in many value-added collaborative online tutorial sessions, where students themselves, stimulate the conversation by bringing in their understandings around the concepts being taught. Students without the benefit of on-the-job experience are engaged into the conversation by their peers with relevant and up to date experiences which assist them in sense making of the content.

Diversity in relation to work and life experience can also present a challenge. Knowles *et al.* (2005) explain that “as we accumulate experience, we tend to develop mental habits, biases, and presuppositions that tend to cause us to close our minds to new ideas, fresh perceptions, and
alternative ways of thinking” (p. 66). Therefore to facilitate student engagement and informed by Wright and Schoop (2003), tailored guidelines for student centered discussions in online tutorials were developed in cohesion with the literature on social constructivist theory (Beck & Kosnick, 2006; Tremblay, 2006). Initially, early online tutorials lacked control and focus with student commitment quite low so student participation strategies were developed for online tutorials covering key points such as: I’m late for the tutorial; who responds first?; when is the right time to ask questions?; can I view the transcript? (Moore & Signor, 2014). These guidelines include the issuing of agendas so students can prepare for each online tutorial.

The improved approach to online tutorials has been well received by students with an observable, positive effect on participation. Students share their learning and experiences with the whole class in an environment that is “safe” and worthwhile. They are able to demonstrate their developing communication skills and critical thinking to their tutors and themselves, for example: a response from the University Student Feedback Survey:

“[Online] Tutorials were interactive and very informative.” (Swinburne University of Technology, 2013).

However, where students are unable to attend during the scheduled timeframe it should be noted that equity around accessibility to the online chats/tutorials is a high priority in the program. Recordings are provided of each session so that students who cannot attend the designated online tutorial can read transcripts at a time convenient to them. Students are able to use these transcripts as a reference for problem resolution and for guidance when completing assessments.

Strategies for assessments with active learning components

To cater for different student learning styles, a mix of formative and summative assessments are employed. According to Nicol (2009) assessments have “both a formative role in that it makes learning possible and a summative role in that it certifies achievements” (p. 12). Many of the assessments in the program include: active learning which permits divergent responses; practical projects to develop work-ready skills; theory-based research reports to communicate contemporary and complex issues; online tests and self assessment opportunities to gauge individual learning; and exams with multiple choice questions, mini case studies and project-based calculation questions, to demonstrate and evidence analysis and problem solving skill attainment.

Active Learning in Assessments

Often the mature aged students in the program have a variety of work experiences and background knowledge. Student participation is enhanced by providing options for students to bring in their own work-related scenarios upon which to base their assessments. To cater for students who may not be currently employed, case studies which emulate real-life scenarios are provided to encourage analysis and problem solving. The case study approach is also used in many of the units to help students contextualise the subject content, for example a response from the University Student Feedback Survey:

The assessments were appropriate for the content, and they assessed real-life applications of the knowledge given in the unit really well. (Swinburne University of Technology, 2013).

Students are encouraged to develop a theoretical understanding of the information systems discipline within a real world learning environment. This facilitates successful career outcomes and provides a foundation for lifelong learning. As online educators, it was important to mirror the on-campus practices where a collegial and interactive approach to learning was adopted. Therefore
active learning approaches often include small groups as occur in online tutorials; industry sourced and real world scenarios such as case studies; and relevant assessment tasks designed to give students the opportunity to develop and enhance teamwork and communication skills.

Project-based assessments encapsulate role playing and real world artefacts which encourage student engagement, communication and collaboration. Meyers and Jones’ (1993) active learning principles were adopted to encourage student team dynamics and collaborative learning through case studies. The case studies emulate real-world business scenarios which may be used by students to measure their understanding of a particular study area. They overtly guide students to relevant learning objects which may be required to develop techniques and to deepen their knowledge. As many of the students undertake the program to augment their own professional status, assessments are developed by ensuring they are relevant to students’ experiences with work or in the community.

As part of the assessment strategy, the assessment tasks in units are often designed as a series of assignments that build on the previous assignment. For example, in a second year unit on business systems design, students undertake in the first assignment a preliminary analysis of a real life case study supported and referenced from mainstream media articles. After completing the preliminary analysis students receive detailed feedback on their progress, what they have done well and where they need to improve. This feeds forward into the second assignment which is based on the student’s preliminary analysis of the case study using extant materials (media) and then conceptualising and articulating a design solution.

Building on previous assessments affords students the opportunity of constructing their own knowledge within unfamiliar problem spaces. In developing and delivering this program, a challenge was how to provide timely and detailed formative feedback on students’ assessments as explained in the next section.

**Strategies for inclusive formative feedback**

The challenge of providing inclusive, engaging and formative feedback to students on their assessments is an area of import for many educators in higher education regardless of the mode of delivery—online or face-to-face (Nicol & Macfarlane-Dick, 2006; Voelkel, 2013). Some traditional methods for formative feedback such as written comments can be perceived as very time consuming by the marker and raises the dilemma of quality feedback versus timely feedback (Wallace & Moore, 2012).

Quality of feedback which is prompt and helps the learner improve performance is of crucial importance (Nicol & Macfarlane-Dick, 2006; Schilling, 2013). Protocols have been established in the information systems program for the return of feedback on assessments within ten working days, enabling students to act upon this feedback to enhance their learning. In relation to quality feedback, part of the solution is the provision of audio feedback which can offer detailed feedback that is quicker to produce than if the same level of detail is typed as comments (Wallace & Moore, 2012).

**Audio Feedback**

The audio feedback provided to students contain constructive critiques of their submissions that transfers on to the next assessment i.e. feedback is not just for the past work but relevant to future use in later assignments and units. The purpose of assessment is to enhance and encourage current and future learning. This method of feedback has enabled the provision of personalised comprehensive analysis of students’ submitted work.
The audio recording of student feedback is done by the tutor with the use of a digital recorder in a quiet place such as at home or office. A sound booth is not necessary. These MP3 files are uploaded directly onto the Learning Management System (LMS), in this case Blackboard. Students then download and listen to the tutor’s comments while viewing their submission. This method for providing feedback is quicker than detailed written comments. As noted by Wallace and Moore (2012) “a 10 to 15 minute audio recording providing feedback on a student assignment would take one of the authors at least three to four hours to type in order to provide the same information” (p. 55). If this task was multiplied by 100 or more students “the time saving attributes of audio recording become clear” (p. 55).

The study by Wallace and Moore (2012) utilised student surveys on the use of audio feedback for assessments and revealed that 74% of students generally agreed that audio feedback provides a richer and more informative type of feedback compared to the more traditional forms such as written comments. An important element is the “personalisation factor” (p. 56) felt by students in hearing the tutor’s voice with 30% of the students’ surveyed indicating this helped them feel “more a part of an inclusive learning environment” (p. 56). Of particular interest is that 80% of students felt that audio feedback enhanced their learning experience indicating “that the audio recording provided better quality feedback that was not as brief as written comments they had experienced in the past” (p. 56).

Audio feedback can assist in addressing isolation between the online student and the educator. The added benefit is that audio feedback creates a sense of rapport between student and educator as well as a personal element often missing in online education (Wallace & Moore, 2012).

**Conclusion**

The strategies adopted in the information systems program, the case, not only cater for diverse student cohorts in the information systems program but more importantly leverages from their diversity. Students enter the program with a variety of work and life experience and subsequent skill bases and learning styles. Andragogical theory as explained by Knowles et al. (2005) highlights that adult learners bring with them rich sources of learning in the form of their own experiences, but they also brings challenges such as pre-conceived views that may hinder a willingness to embrace new ideas and perceptions. Therefore to encourage student engagement the following key areas, strategies and techniques may be used to facilitate and embrace student diversity:

- **Student engagement with subject content**: encouraged through a variety of software tools such as Mimio, Camtasia and Blackboard Collaborate and through the use of learning objects that allow students to more easily identify the gaps in their knowledge hence focus their time and study in the areas needed.
- **Student engagement with educators and peers**: developed through collaborative techniques adopted in discussion boards and online tutorials/chats.
- **Providing assessments with active learning components**: through theory and work-related assignments that encourage divergent responses and permit students to associate to their work situation or visualise from real-world scenarios.
- **Providing inclusive formative feedback on assessment submissions**: students receive constructive and timely audio feedback which enables them to feed these forward to subsequent assessments.

These strategies coupled with the contemporary literature demonstrate the capacity for online education to do more than just cater for students from diverse backgrounds. This diversity can...
enrich online programs when mature age students are encouraged to utilise and share their knowledge and experiences with peers and educators. The online environment, through collaborative techniques has the potential to foster engagement and active learning beyond subject matter that can be rich and rewarding not only for the students but for the educators as well.

The case study provides brief insight into the potential for sound pedagogical principles, working with student diversity for the engagement of open access students. A limitation and subsequent area for further research is to evaluate, through qualitative methods, the effectiveness of the strategies described in this paper in terms of student satisfaction and perceived learning growth. Research will also be conducted to investigate the causal effect on student “no attempts” within open access education.

Another identified area for further research in a more general light is the understanding of how higher education may or may not be meeting the needs of mature age candidates for career advancement. This paper identified a potential gap in the literature and government focus in this area.

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