Editorial policies

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*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.

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Introduction to *Open Praxis* volume 9 issue 4

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*Open Praxis* is a peer-reviewed open access scholarly journal focusing on research and innovation in open, distance and flexible education. It publishes 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. This last *Open Praxis* issue in 2017 is an open issue that includes eight research papers and one book review. 14 authors from Australia, México, South Africa, New Zealand, Spain, the United States of America, Thailand and the Republic of Korea have contributed to the different sections.

The first two papers deal with conceptual frameworks and models that can help to understand and improve educational practices.

In the first paper (*The ecology of the open practitioner: a conceptual framework for open research*), Adrian Stagg from the University of Southern Queensland (Australia), after explaining the relevance of local context to interpret open educational practices and introducing Bronfenbrenner’s approach, uses his ecology of development levels to show how it can be used as a framework to undertake research to deeply understand OEP. In the first stages of an ongoing study, the author has applied the framework in four Australian universities.

In the second conceptual paper (*Fractal: an educational model for the convergence of formal and non-formal education*), Larisa Enríquez from Universidad Nacional Autónoma de México, considering the challenges that universities currently face, presents a model for flexible education that deals with fours dimensions: student-centered teaching, concept-based curriculum design, heutagogy and openness. In an iteration mechanism, this leads to a fractal model. The author provides two examples of application of this model and defends its usefulness to improve education.

The next two papers relate to educational resources, one focused on OER and the other in traditional textbooks.

In the first one (*Mainstreaming use of Open Educational Resources (OER) in an African context*), Tony John Mays from University of Pretoria (South Africa), presents a case study in a Kenyan university, framed in a wider research that included other African countries and institutions in the exploration of the transformative potential of OER. Using an interpretive and participatory methodological approach, the author explains the research process and findings in detail, and highlights the importance of aligning the introduction of OER with the overall institutional vision and mission, if willing to become mainstream.

In the second one, Sarah Stein, Simon Hart, Philippa Keaney and Richard White [*Student Views on the Cost of and Access to Textbooks: An Investigation at University of Otago (New Zealand)*] present a survey-based study focused on affordability and accessibility behaviours related to textbooks, undertook in a face-to-face university where traditional (hard copy purchased) textbooks are the main resources used in the courses. Their findings challenge other studies' results, and the authors express the need to listen to students' voices and reflect about the changing nature of information provision.
The next three papers address the study of three online educational practices and explore their effects on students' learning.

In the first case (Learning the psychology of the tip-of-the-tongue phenomenon through on-line practice), Marcos Ruiz and María José Contreras from Universidad Nacional de Educación a Distancia - UNED (Spain) report about an experimental study in a distance course, where students' performance in the final exam was compared considering their previous participation in an online practical lab focused on a specific content included in the “basic psychology” course study program. The positive results encourage integrating more online apps and practice in the courses.

The second case (The effects of participants’ engagement with videos and forums in a MOOC for teachers’ professional development), by Fernanda Cesar Bonafini from The Pennsylvania State University (United States), focuses on MOOC-Ed, presenting a statistical study about the learners’ profile and factors that predict completion. In this particular MOOC, the number of videos watched was not significant to predict completion; and engagement in discussion forums was. The author highlights the implications of these results.

The third case (Effect of Tell Me More on EFL undergraduate students’ English Language achievement), by George Gyamfi and Panida Sukseemuang from Prince of Songkla University (Thailand), describes the use of an asynchronous online learning system (TMM) and its effect in the students’ proficiency in English. Initial placement in any of the four levels, progress and final achievement were measured through online tests, and the study shows the improvement considering the different levels, as well as the role of the time devoted to the program.

Closing the research papers section, William H. Stewart from Gangnam-University of California Riverside (Republic of Korea), in his paper Recognizing the expatriate and transnational distance student: A preliminary demographic exploration in the Republic of Korea, attempts to recognize a specific type of students in the distance mode, different to the international student, and focuses in the case of South Korea to describe their profile. He also highlights difficulties encountered when undertaking this research about a yet quite unknown population.

Finally, the issue includes a review, by Daniel Domínguez, of the book MOOCs and Their Afterlives: Experiments in Scale and Access in Higher Education, edited by Elizabeth Losh and published by the University of Chicago Press in 2017.

In this issue 4th issue in 2017, we specially thank all the reviewers who have collaborated in the four issues in volume 9. Their names and affiliations are listed in the full issue and in the journal website (http://openpraxis.org/index.php/OpenPraxis/pages/view/reviewer).
The ecology of the open practitioner: a conceptual framework for open research

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Abstract
Open Educational Practices (OEP) have gained traction internationally over the last fifteen years, with individuals, institutions, and governments increasingly interested in the affordances of openness. Whilst initiatives, policies, and support mechanisms are evident, there is an ever-present danger of localised contexts being unintentionally unrecognised, which has a negative effect on mainstreaming the practice sustainably. This paper presents a conceptual framework for open research based on Bronfenbrenner’s Ecology of Human Development (1979) and asserts that it is through an understanding of complex influences and contexts of practice that strategic and operational processes to enable open education are manifested. It presents the framework through the lens of an emerging research project examining the experience of OEP in four Australian universities which will apply the framework as a guide for not only survey and interview question design, but also data analysis with the aim to inform broader policy development locally and nationally.

Keywords: open educational resources; open educational practice; theory of ecological development; higher education; academic development; affordance theory

Introduction
The term Open Educational Resources (OER) has been researched for fifteen years. Over that time the Cape Town Declaration and the Paris Declaration have reached an international audience, operationalised by global progress in institutional and national policy, legislation, funding initiatives, research projects, conferences, symposia, and communities of practice. Despite this, awareness and capacity-building remain two of the seemingly indefatigable barriers to widespread engagement with Open Educational Practice (OEP).

The position of OEP has been at the nexus of educational change as it relates to teaching practice, teaching resources, and the role of the student and teacher in an open and connected learning environment. As student and teacher context and prior experience is accepted as an integral part of constructivist, and connectivist pedagogies, so too should this inform the sustainable, embedded transformation that open education promises.

This paper will propose a framework that aligns Bronfenbrenner’s ecology of human development (1979), and Sperber and Wilson’s relevance theory (1995), and situates the resulting framework within the context of open academic development. It is suggested that by examining the practitioner from an authentic perspective, more effective understanding of the key stakeholders in OEP will be possible. The ‘authentic perspective’ sought is one informed by actual, lived practice that recognises the effects of enablers and barriers within an individuals’ environment. It seeks to do so concurrently with an examination of the value proposition of openness in a global educational environment that provides a rationale for engagement with OEP to accompany the proposed framework. Finally, the application of this conceptual framework is considered as it relates to an emerging research project.
Open educational practice: a question of context

Whilst the promise of OER has been equity of access to education, to reduce the associated costs of education, broader participation and opportunities, and opportunities to raise the quality of education internationally, the priorities for OEP differ by geographic region. The results of an international community of practice across nine geographic areas (D’Antoni, 2008) highlighted the perceived priorities for resource investment to support OEP (Table 1). Whilst there are some areas of common concern, very few of the priorities are listed in consistent order. This is unsurprising when one considers that each geographic region has differences in culture, education, infrastructure, access, and equity of education.

Table 1: Identified priorities by geographic region. Adapted from D’Antoni (2008, pp. 24–25)

<table>
<thead>
<tr>
<th>Region and response numbers</th>
<th>Priority 1</th>
<th>Priority 2</th>
<th>Priority 3</th>
<th>Priority 4</th>
<th>Priority 5 (if provided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe (n=97)</td>
<td>Awareness raising</td>
<td>Communities</td>
<td>Sustainability</td>
<td>Copyright</td>
<td>Quality assurance</td>
</tr>
<tr>
<td>North America (n=72)</td>
<td>Communities</td>
<td>Awareness raising</td>
<td>Sustainability</td>
<td>Capacity development</td>
<td>Quality assurance</td>
</tr>
<tr>
<td>Sub-Saharan Africa (n=54)</td>
<td>Awareness raising</td>
<td>Capacity development</td>
<td>Communities</td>
<td>Research</td>
<td></td>
</tr>
<tr>
<td>Latin America &amp; Caribbean (n=28)</td>
<td>Capacity development</td>
<td>Communities</td>
<td>Awareness raising</td>
<td>Policies</td>
<td></td>
</tr>
<tr>
<td>South &amp; West Asia (n=27)</td>
<td>Capacity development</td>
<td>Awareness raising</td>
<td>Learning support services</td>
<td>Communities</td>
<td>Technology tools</td>
</tr>
<tr>
<td>East Asia (n=15)</td>
<td>Awareness raising</td>
<td>Copyright</td>
<td>Sustainability</td>
<td>Communities</td>
<td>Quality assurance</td>
</tr>
<tr>
<td>The Pacific (n=14)</td>
<td>Awareness raising</td>
<td>Capacity development</td>
<td>Quality assurance</td>
<td>Communities</td>
<td></td>
</tr>
<tr>
<td>Central &amp; Eastern Europe (n=10)</td>
<td>Awareness raising</td>
<td>Communities</td>
<td>Research</td>
<td>Standards</td>
<td>Policies</td>
</tr>
<tr>
<td>Arab States (n=8)</td>
<td>Technology tools</td>
<td>Awareness raising</td>
<td>Capacity development</td>
<td>Communities</td>
<td>Quality assurance</td>
</tr>
</tbody>
</table>

Note that only priorities that were identified by at least 50% of respondents were included in this table.

Whilst ‘awareness raising’ was identified as a key issue by many stakeholders, issues such as copyright, quality assurance, research, and even policy were not well represented. When the data is aggregated by stakeholder type (D’Antoni, 2008, p. 25), the three highest ranked priorities for higher education institutions are research (81%), learning support services (74%), and awareness raising (71%). Capacity development is ranked fifth (66%) and communities and networking is ranked eleventh (of twelve, at 54%). The aggregate data presents a very different priority focus. Table 2 shows the representation by region in the response count. In the aggregate data, North America and
Western Europe account for 52% of respondents, whilst others are represented significantly lower such as Arab States (2%), The Pacific (4%), and East Asia (5%). The contextual differences between each region make the aggregated data problematic for international strategies, but when viewed by region, an actionable list becomes more apparent.

Table 2: Response by location as a percentage of overall responses (D’Antoni, 2008).

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of respondents</th>
<th>Percentage of total respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>97</td>
<td>30</td>
</tr>
<tr>
<td>North America</td>
<td>72</td>
<td>22</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>54</td>
<td>17</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>South &amp; West Asia</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>East Asia</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>The Pacific</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>Central &amp; Eastern Europe</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Arab States</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>325</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

In order to gain traction globally, open education resources, and OEP need to focus on enabling reuse and repurposing for localisation of education. Creative Commons and Public Domain licensing remain key levers for this process, but providing resources in non-proprietary formats (rather than assuming access to software) is an essential part of a sustainable movement. It is this reliance of proprietary formats that have hampered reuse in Sub-Saharan Africa (Muganda, Samzugi & Mallinson, 2016) for example, and a criticism of MOOCs (Godwin-Jones, 2014) which had previously promised to reach new learners. The considerations that drive repurpose-enabled resource and learning design only arise from a combination of awareness raising and regard for the context of other practitioners. Discounting the role of context in open education, however, implicitly empowers a very different, marginalising agenda.

Almost a decade has passed since the publication of these research findings, but more recent work reinforces geographic differences in open education adoption. Latin America still focuses on capacity development and policy implementation as government policy making education mandatory and free does not have universal traction, and expenditure on education does not show marked increases (Toledo, Botero & Guzman, 2014). The capacity of teachers to improve the quality of education, especially in Argentina, Chile, Columbia, and Uruguay, remains a priority for action, as does the development of models for creation and dissemination of OER (Toledo et al., 2014), and general awareness-raising (Torres, 2013). Brazil’s government has actively invested in open education, open science, and open government initiatives (Pena, 2015) in response to citizen expectations for transparency, accountability and affordability.

African researchers report similar needs for awareness-raising and capacity building (Mtebe & Raisomo, 2014). A 2016 survey (Muganda et al., 2016) found evidence of a strong desire among educators to work with OER, driven by challenges in effectively purchasing and disseminating commercial proprietary learning resources. The priority for community (as noted in the D’Antoni
outcomes) has acted as a mechanism for partnerships such as the Open University UK (Mtebe & Raisomo, 2014), and the active participation of OER Africa (2016) in the higher education environment. Recent research conducted in Turkey (Islim & Cagiltay, 2016; Islim, Koybasi & Cagiltay, 2016) mirrors the findings for Eastern Europe; again showing that awareness-raising (this time focused on students), and perceptions of quality and standards were particularly salient. In direct contrast though, Turkish Faculty responded that the greatest priority for action was the protection of their intellectual property rights, and establishing incentives for (re)use of OER (Kursun, Cagiltay & Can, 2014).

Across these regions, it can be reasonably argued that similarity remains in articulated priorities, despite nearly ten years of OER research and practice. This demonstrates that local context is still critical to understanding OER and OEP; that is, a universal approach is neither appropriate nor beneficial for increasing the traction and acceptance of open education globally. The affordances of openess, therefore, are interpreted locally, and the practitioner environment mediates the ability of the individual to fulsomely engage with OER and OEP.

The role of context

The term ‘affordances’ is used interchangeably with ‘opportunities’ in higher education; most often when describing educational technology. Open Educational Resources (OER) are no different. Tracing the term back to Gibson’s (1977) work is useful as it reinforces the need to reconsider language, or at least, purposefully understand and consistently use language meaningfully. Gibson’s lens was ecological physics, stating ‘the affordances of the environment are what it offers animals, what it provides or furnishes, for good or ill (1977, p. 68). That is, the ‘combination of properties’ (p. 67) found in an environment or component of that environment are judged by the inhabitants of the environment, who ultimately ascribe worth or value. As each species of animal occupies an environment niche, pre-existing conditions first need to be evident to support the species to occupy the niche. The pre-existing conditions, therefore, enable the affordances, and also shape ease of use of these affordances.

In the same way, pre-existing conditions need to exist in an educational environment (and the levels will be explored using Bronfenbrenner’s work as a lens in the next section) for the affordances of OEP to be judged as ‘worthy’ or valuable’ by practitioners. The extent to which an affordance is evident, or perceived as such, is entirely dependent on environment inhabited by the practitioner. For example, the pre-existing condition of reliable, stable Internet access enables global sharing of resources. The Creative Commons licence is another pre-existing condition.

When this ‘combination of properties’ (Gibson, 1977, p. 67) is realised, the affordances of OEP, namely accessing existing resources to save time and build on the work of others, and sharing local content, become apparent. If one has access to Creative Commons licensing, but an unreliable (or inaccessible) Internet connection, the affordances are interpreted differently –and the resulting action– is likewise different. Obviously, the above example is simplistic in its failure to recognise awareness levels, individual alignment with open philosophies, technical proficiency, pedagogical and licensing support, platforms to enable sharing, and even the presence of policies that support (or act as a barrier to) sharing.

Furthermore, Gibson explicitly references the environment as shaped by humans to yield certain affordances, especially as they relate to making life easier and more controllable. In the same manner, OEP advocates seek to alter their environments, whether by policy, strategy, or support, to make the environment more ‘hospi
table’ to OEP. Interestingly, Gibson does note that in making changes to the environment to benefit one species, others are either disadvantaged, or their survival becomes more
difficult. This manifests as a commercial reality for entities that rely on closed or controlled access to proprietary sources of information—such as privatisation of research outcomes, and textbook publishing models—thus positioning free culture and open education as counter-movements to business interests.

All of these ‘conditions’ form part of a larger contextualised ecology of practice—thus leading to Bronfenbrenner’s work.

**Why Bronfenbrenner?**

Engagement with Bronfenbrenner’s ecology of human development and its application to OEP is predicated on value propositions of education requiring articulation prior to an exploration of the framework.

Firstly, if we accept the integral role of context in not only OEP, but in education globally, it is accompanied by a commitment to the notion that each educator and learner applies their own experiences, assumptions, knowledge, and values to an educational encounter. Paolo Freire’s pedagogy of the oppressed (1997) notionally rejects education as ‘banking’—that is, that students are ‘empty accounts’ that are enriched only when the teacher makes a ‘deposit’ (of knowledge). Freire argued that accepting the banking metaphor was tantamount to ‘dehumanising’ the learner by actively discounting and devaluing their existing knowledge and experience in favour of prevailing information (which he linked to education as a tool of the oppressor). Constructivist and connectivist pedagogies explicitly build upon this position by actively applying student-centred learning design.

Secondly is the somewhat problematic nature of semantics in the open education discourse. ‘Adoption’ of open practice has become part of the vernacular to describe the process whereby a practitioner accepts (‘adopts’) OEP; with an implied outcome of transforming practice to include openness. A more realistic description would be ‘engagement’; wherein a practitioner explores OEP through the lens of their own context. The outcome of engagement is conceptual and practical alignment between aspects of OEP and the practitioners teaching approach, mediated by influencing contextual factors.

It is possible to repurpose a definition of student engagement and propose that a higher education practice is

> ‘the time and effort that practitioners put into their teaching practice, that leads to experiences and outcomes that constitute success, and the ways an institution allocates resources and organises professional learning opportunities and support services to induce staff to participate in, and benefit from such activities’ (adapted from Garrison & Vaughan, 2013, p. 27).

The way in which practitioners are engaged with OEP, and how the institutional factors influence this will be discussed further in this paper.

Bronfenbrenner’s work was heavily influenced by Wilhelm Dilthey who stated that generalised laws of psychological process were impossible, and instead argued for a descriptive psychology that ‘would capture the unique complexity of the individual with all its idiosyncrasies’ (Bronfenbrenner, 1979, p. VIII). Bronfenbrenner sought a middle ground of descriptive and explanatory psychology, believing that explanations of behaviour ‘are to be found in interactions between characteristics of people and their environments past and present’ (1979, p. X). Rather than seek ‘truth’ in laboratory settings, this approach advocated for understanding/comprehending/studying the enactment of behaviours in authentic settings underpinned by the belief that one’s environment is part of an overlapping, complex ecology that includes four distinct inter-connecting systems (described below). This complexity is observed as the inter-relationships between the practitioner and the broader environment (such as
whether the local environment permits open practice); discrete parts of the environment (such as the interaction between government proprieties and educational funding); and even between the practitioner and aspects of the environment (such as how national research agendas can be linked to government funding, and how these two agendas then influence the publishing behaviour of an academic).

Whilst the ecology is equally as valid for describing the student experience this paper will focus on the practitioner only. The inter-relationship of practitioner and ecology is expressed at four distinct levels:

- **Microsystem.** These are the inter-relationships present in an individuals’ most immediate environment - including peer relationships and the personal working space – that impact on a persons’ development.

- **Mesosystems** occur when two or more microsystems interact and an individual is able to correlate these systems. This could be in terms of expectations of others in the setting, or behavioural norms between settings. Whilst the conceptual bridging can often provide an individual with a sense of shared role across the microsystems, conflict can occur when an individual perceives that two entirely different roles from two distinct microsystems are now present in a single mesosystem – leading to a crisis of role identity.

- **Exosystems** are the larger forces that have an (often) indirect influence over the individual. Institutional policy, expectations for graduate outcomes, requirements of professional accredit- ing bodies, and changes to work environment or structure are all examples of exosystems encountered by academic staff.

- **Macrosystem** are the highest tier of the ecology, representing culture, socio-economic status, typology of country (such as developing, developed, industrialised, and semi-industrialised). The macrosystem is a societal construct of shared values, history, and identity, and can be altered or reconstructed through generational change.

Each level has inter-dependencies and inter-relationships that influence an individual’s practice, assumptions, values, and ability to conceptually change and development. In an educational setting, all four levels of the ecology informs the practitioners approach to teaching and learning, and frames their response to enhancing, transforming, or challenging their own practice. For OEP researchers, the ecology becomes a map of influencing factors providing a macro- and micro-view of an institution and how OEP may distinctly manifest (or develop) under those conditions, and how perceived role aligns with openness.

**What is development?**

The focus on the ecology levels (systems) acknowledges that developmental change is predicated on a change of role for the practitioner –whether actual or perceived– which is supported by the open education literature. Once empowered by a model of scarcity, higher education (and education more generally) has needed to adjust their role as information resources become both easily-accessible, and freely available. One such approach, the ‘pedagogy of abundance’ (Weller, 2011) is founded on changing economic models that are outmoded due to abundance, and non-economic models such as teaching practice. Previous models of education privileged the centrality of the ‘scarce expert’ (p. 226) who was responsible for the provision of information-as-knowledge (akin to the aforementioned ‘banking metaphor’ of Freire). This teacher-centred pedagogy has been challenged by information digitisation and broader access; the result being a repositioning of the teacher in the educational space. Approaches such as connectivist pedagogy
The ecology of the open practitioner: a conceptual framework for open research

(Siemens, 2013) is an example of student-centred learning and teaching which presents a catalyst for re-positioning the teacher – often from creator-of-content, to curator-of-content, and guide. In part, connectivism was a response not only to the digitisation of resources, but also the availability of OER.

When a practitioner experiences examples of open practice, this alone can be a catalyst for change in role, as Bronfenbrenner states that ‘active engagement in, or even mere exposure to, what others are doing often inspires the person to undertake similar activities on her own’ (1979, p. 6). The success of these endeavours is contingent on the presence of supportive networks or processes that both present in the meso-, and exo-systems within the ecology and, are valued by the culture or subculture. Thus, the role of mediating artefacts (Conole, 2009), or those people and resources that can explicitly articulate, contextualise, and support open practice (whether as library guides, websites, access to learning designers, membership in a network), becomes integral to successful change and development.

Development is influenced by the ability to correlate a range of settings and apply these settings to one’s own environment. Sperber and Wilsons’ (1995) relevance theory asserts that individuals always try to seek relevance in any setting (and thus establish value), and that they will usually expend as little energy as possible (a path of least resistance) to assimilate relevant knowledge into practice. Recognition of the epistemological, contextual, and situational value of change is part of the evolving nature of teaching experience; with relevance as a driving force for individual change in teaching practice. Thus, any type of professional learning support for open education needs to be purposefully and deliberately aligned with the micro-, meso-, and exo-systems of the ecology to maximise relevance, although there is space in this model to acknowledge that macro-systems will influence priorities and desired outcomes for professional learning. Traction for OEP is therefore established through relevance-making, and value proposition. The latter can be reasonably argued as part of relevance-making, but assumes different guises at each level of the ecology, that is, institutional policy-makers may ascribe a different value on openness at the strategic level than practitioners seeking the operational value of openness. When viewed through the lens of professional learning, this applies ‘contextual positioning’ (Amundsen & Wilson, 2012, p. 109-110) to development initiatives. This positioning chooses to focus on activities that will lead to ‘improving or enhancing an instructor’s individual teaching practice versus activities that engage faculty in teaching enhancement as a socially situated practice’ (p. 109), and that support is identified and implemented for individual use.

Bronfenbrenner describes development as ‘a lasting change in the way in which a person perceives and deals with his environment’ (1979, p. 3; gendered language retained from the original text). Mindful of this definition, support, relevance-making, and value all become part of a sustainable change in practice – which is not possible without an understanding of context, or the ability to create aspirational realities.

Reshaping reality: OEP as aspirational reality

Bronfenbrenner was influenced by Piaget’s notion of child development as a series of rationalisations between the self-constructed imaginative world and the ‘constraints of objective reality’ (Bronfenbrenner, 1979, p. 10), and that this internal environment is in a constant state of refashioning to become more compatible with achievable reality. The highest form of development, he argues, is the ‘growing capacity to remould reality in accordance with human requirements’ (1979, p. 10). This stance is mirrored by Gadamer (1989) in the construction of ‘the lifeworld’ (that an individual is the product of history and culture) that he asserts exists not only as an
individual reality, but as part of a communal whole. The lifeworld is therefore influenced by, and able to influence, broader reality. A concurrent, cyclical development process is thus possible as the individual undertakes internal development (such as capacity- and knowledge-building that may alter values and priorities) that allows greater agency for external development within the achievable reality. That is, new realities are more achievable as a result of internal development processes.

The role of individual and communal realities is an important touchstone for OEP as it is not just the individual’s ability to conceive changes to their reality (and the means by which to achieve them), but also the positioning of openness. It could be argued that if openness is presented as a too radically ideological reality, it dis-incentivises engagement. Presenting OEP in combative terms (i.e. ‘the battle for open’) or as a ‘disruptive’ idea that will lead to the destruction of traditional education systems may be counter-productive to gaining traction in higher education.

A more strategic approach for OEP to gain a significant foothold in higher education is one designed around achievable, local aspirational realities, coupled with opportunities for professional learning and support – all of which requires contextual understanding for success implementation.

Ecology, development, and reality: applying Bronfenbrenner an OEP research project

Thus far, this paper has established –based on context– the need for a deeper understanding of open education practitioners (both emerging, and established) environments of practice and the manner in which these environments act as enablers and barriers to OEP. The ecology of development has been leveraged as a mechanism for articulating and exploring contextual influences on practice, as well as the role of constructed and mediated realities in development. This approach privileges the role of contextual focus for strategic and operational initiatives related to OEP and provides a lens for communicating the value of openness in higher education, and will be enacted (as described below) by the author as part of emerging research.

The role of the conceptual framework is to organise the aspects of inquiry contained within the research project as a way of representing them to an end-user, or reader (Antonenko, 2015). It provides purposeful articulation of the phenomena to be observed, and in whom they will be observed. Additionally, it seeks to represent (often visually) theory that demonstrates alignment between the phenomena to be researched, and the methods employed to do so (Ravitch & Riggan, 2012), as a foundation for empirical research.

Table 3 provides a sample representation of the data sources within a proposed survey that are linked to the levels of ecology. Each level provides a conceptual ‘boundary’ for data, but these are porous boundaries due to the relational nature of the influencing factors. When applied to the author’s emerging research on the Australian higher education (HE) experience of OEP, an analysis of the influences on engagement with OEP is sought to establish ‘institutional identities in openness’ across four case study sites.

The case study sites have been selected as a mix of metropolitan, and regional; research-focused, and teaching-focused, and a selection of those teaching primarily on-campus, as well as those teaching primarily online cohorts. Each of these characteristics describes a type of institutional focus and environment that may demonstrate differences in the engagement with, and value proposition of, OEP. It is initially hypothesised that even within a single country; contextual differences will be evident based on the key characteristics of the participating institution.

The case study method will be used as it supports the investigation of a phenomenon in context (Yin, 2014), rather than seeking an artificial divide between context and activity. It is applied when the researcher approaches continuing phenomena situated in complex circumstances and to examine the behaviour of groups within a particular structure (Yin, 2014). The method therefore directly supports studying and comprehending the complexity of contextual open practice. Whilst previous studies (Bossu, Bull & Brown, 2015) have examined the Australian OEP environment, this was undertaken at the ‘exosystem’ and ‘macrosystem’ levels only. This study uniquely contributes to an understanding of OEP by examining the impact and inter-relationship between all systems in the ecology in order to propose processes for guiding OEP initiatives that recognise and operate alongside local practices.

Analysis of the survey indexed against the ecology levels is anticipated to illuminate areas for further investigation through semi-structured interviews with practitioners, referred to by Gillham (2000) as ‘the most important form of interviewing in case study research (p. 85). As the research

<table>
<thead>
<tr>
<th>Level of ecology</th>
<th>Examples</th>
<th>Alignment with survey questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Age, length of time employed in the HE sector, professional or academic staff.</td>
<td>• Demographic questions</td>
</tr>
<tr>
<td>Microsystem</td>
<td>Degree level taught, primary mode of teaching, ‘ownership’ of course design.</td>
<td>• Who has the decision-making power over the resources included in your course(s)?</td>
</tr>
<tr>
<td>Mesosystem</td>
<td>Awareness of open resources within their discipline, influence of commercial publisher resources in course design, types of material included in course design.</td>
<td>• Please tick from the list the types of self-authored resources included in your course (examples include but are not limited to videos, eBooks, textbooks, recorded lectures, study guides). • Please tick from the list the types of commercial publisher-authored resources included in your course (examples include but are not limited to videos, eBooks, textbooks, recorded lectures, study guides).</td>
</tr>
<tr>
<td>Exosystem</td>
<td>Institutional policy, disciplinary requirements, accrediting professional body compliances.</td>
<td>• Does your institution have policies that support openly licensing your teaching materials? • What mechanisms or resources are in place at your institution to support open practices? (select from a list including but not limited to general websites, librarians with specialist knowledge, copyright officers)</td>
</tr>
<tr>
<td>Macrosystem</td>
<td>High-level barriers to OEP engagement, national policy, disciplinary culture.</td>
<td>• Please select from the list any barriers you have experienced to open practice (list includes but is not limited to access to internet, access to technology, no support within the discipline for openness, lack of access to specific software packages)</td>
</tr>
</tbody>
</table>

**Table 3: Examples of ecological influences in higher education contexts**
is positioned to inform change and improve engagement with OEP, the ‘methodology of friendship’ (Fontana & Frey, 2008, p. 117) is intentionally aligned with the desired outcomes. Arising from Kong, Mahoney and Plummers’ (2001) work, the methodology of friendship assumes that the neutrality of the interview as data collection is compromised by complex contextual factors; thus the interviewer takes ‘an ethical stance in favour of the individual or group being studied. The interviewer becomes an advocate and partner in the study, hoping to be able to use the results to advocate social policies’ and change in practice (Fontana & Frey, 2008, p. 117). As openness contains an ideological component, and the author is dispositionally empathetic to openness, this method pragmatically frames the interview component for this research. The research design intentionally embraces the idea that ‘the more methods we use to study [practitioners], the better our chances will be to gain some understanding of how they construct their lives and the stories they tell us about them[elves]’ (Fontana & Frey, 2008, p. 152).

It is this deeper emerging narrative of OEP that is sought by engaging with, and implementing this framework.

**Future directions**

This conceptual paper forms the model for emerging mixed methods research of the Australian higher education experience of OEP. The conceptual model informs and is interwoven in the mixed methods approach for this research, with explicit links to all questions in the initial survey and the semi-structured interviews that form the secondary data collection phase. A case study approach has been selected for four Australian institutions to provide a deep understanding of individual cases as a basis for a broader meta-analysis. Over the course of this research, the conceptual model will be tested, refined, and re-presented as part of the overall research outcomes. It is suggested that such an approach is transferable across the sector (and to other geographic regions) as it is inherently disposed to revision and repurposing based on context.

**Conclusion**

Context is the foundation for understanding teaching and learning practice, and the influences on practitioners are evident at varying levels of a complex ecology. In order to gain momentum, OEP must be positioned in such a manner as to offer a value proposition to practitioners, whilst incentivising change of practice. Successful implementation of any OEP strategy requires a fulsome understanding of this ecology to present achievable aspirational reality shifts for the sector, institutions, faculties, and individual staff, whilst concurrently operationalising support mechanisms to purposefully engage practitioners in professional development related to OEP.

Presenting OEP as a direct threat, challenge or radical reconceptualization of teaching role is counter-productive, but institutions should instead seek approaches that are consistent with incremental change aligned with institutional and individual values in education.

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Fractal: an educational model for the convergence of formal and non-formal education

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Abstract

For the last two decades, different authors have mentioned the need to have new pedagogies that respond better to current times, which are surrounded by a complex set of issues such as mobility, interculturality, curricular flexibility, accreditation and academic coverage. Fractal is an educational model proposal for online learning that is formed by four basic elements that allow higher education institutions to advance in four different dimensions: teaching, knowledge, personal development and access. The elements that make up the model are: student-centered teaching, concept-based curriculum design, heutagogy, and openness. The present work describes the educational model and two possible applications of it in the area of Education, thus giving rise to an option that could transform the curriculum of a degree, while integrating in the formal environment of online education, the space for non-formal education.

Keywords: Concept-based curriculum; heutagogy; student-centered teaching; concept domain

Introduction

For the last two decades, different authors (Tünnerman, 2003; Adell & Castañeda, 2012; Bates 2015; Cobo, 2016) have mentioned the need to have new pedagogies that respond better to current times, which are surrounded by a complex set of situations that require reflection and to re-think about the way we educate students. In the specific case of universities, different drivers of change (both external and internal) are identified, which demand us to consider new perspectives in order to continue developing knowledge, understanding, research and outreach tasks that have traditionally been developed. Among the external factors, we find demographics, technological and labor aspects that have quickly changed the social and professional context, bringing up mobility, migration and permanent training into the scenario. Likewise, we also find internal factors related to the daily activities that occur within the universities. Since the end of the 20th century and at the beginning of the 21st century, several authors have pointed out the need to adapt universities' models to those that are more in line with the current context we live in, considering pedagogical methods centered on collective and self-directed work which allow, through curricular flexibility, personal learning paths with interdisciplinary approaches that combine formal and non formal education. These methods should also consider the strategic use of information and communication technologies, not only to provide materials, academic counseling and the development of learning networks beyond the formal classroom, but also to promote scientific and technological knowledge (González-Casanova, 2001; Tünnerman, 2003; Miklos & Arroyo, 2008; Redecker et al., 2011; Bates, 2011). In particular Schuetze, Bruneau and Grosjean (2012) mention:

The old, isolated, ivory-tower university is outmoded as universities are driven in new directions. The trend toward networks of research and learning; internationalization with its unfinished agenda; the information and communication technologies with their potential, still largely untapped;
competitiveness and the attempt to create market niches; and commercialization have, or will have, effects that are difficult to capture by one single uniform model (Schuetze, Bruneau & Grosjean, 2012, p. 9).

At the same time, as there are opinions and specialists who talk about the transformation of universities, there are also experts in governance and university reform who have pointed out the difficulties that the traditional big universities are undergoing in order to renew and reinvent themselves since, in many cases, the internal processes that exist to modify organizational structures and curricula are long and complicated. Having said this, how could more flexible and open educational schemes be offered where formal and non-formal study converged? How can we reconcile the work carried out by teachers with the students’ personal learning interests? What characteristics should educational models on which the new universities rely, have?

**Elements of a flexible model of education**

As it has been said in the introduction to this paper, the challenges facing universities are complex and it is believed that is difficult to address all of them in a single proposal. Even Enríquez (2017) points out how this concern has led to the birth of educational proposals, some of which arise within existing institutions that share a renewal interest while other proposals have been born completely as new institutions, under alliances with companies or non-governmental organizations, governmental organizations or, among institutions of education and research. Examples of these proposals are found in MOOC’s (Massive Open Online Courses), Quest University of Canada (https://questu.ca), Alternative University in Romaine (http://universitateaalternativa.ro/), University of the People (http://www.uopeople.edu), Knowmads (http://www.knowmads.nl), to name a few. All of these examples have a solid foundation in curriculum flexibility, which also include some other features such as the fusion of standardized content with individualized content, learner-control with teacher-control, academic community with open communities; giving in this way, solutions that combine formal and non-formal alternatives to build knowledge (if we consider non-formal learning as Rogers describes it).

Non-formal learning includes active, participatory, democratic, responsible, reflexive, critical and inter-cultural elements. Non-formal skills tend to be similar to everyday life skills, or at least, to be a means by which individuals can cope with their lives in different contexts. Non-formal competences could be specified in terms of acting as a bridge between formal knowledge on the one hand and informal aspirations, wishes and perceptions on the other (Rogers, in Singh, 2015, p. 38).

The educational model presented below is composed of four elements that are considered, to give rise to advance in four specific dimensions: curricular flexibility, adaptability to the environment, pertinence and academic belonging and, ease of access. The central elements of the model to achieve these objectives are student-centered teaching, concept-based curriculum design, heutagogy and openness (see Figure 1).
The reason and specific focus of each of these elements is briefly described below.

**Concept-based curriculum design**

It is common to find, in the traditional models of education, that the content of the academic programs is composed by subjects or units that has generated, among other things, extensive detailed programs that, in the vast majority of cases, isolate a topic from the others. However, if we consider the essential concepts of a curriculum, we can optimize teaching and learning by concentrating on deep understanding of each term which, depending on the context to which it is translated, takes on new meanings (if we consider concepts to be cognitive units of meaning, which arise from the interaction with the environment and the previous knowledge we have, in the moment we relate this concepts with new ones, we can create new knowledge and even new concepts).

According to Erickson’s work, concept-based curriculum design not only reduces curricular load in a course, but also helps to focus teaching on general and relevant aspects while making learning methods and strategies used by students more flexible (Erickson, 2008).

Erickson herself points out that concept-based design, when it is connected with prior knowledge, brings relevance and meaning to students’ learning while causing students to process facts and skills
on deeper intellectual levels, as they relate to facts, strategies and skills linked to key concepts, their
generalizations and principles. It also increases the motivation for learning by involving personal
knowledge and, increases the fluency of language when students explain and defend their own
understanding with reliable information (Erickson, 2008, p. 83).

In this sense it is considered that the curriculum based model gives the chance to easily introduce
new concepts into the classroom, that emerge from the specific interests of the group.

**Student-centered teaching**

For the design of the new educational models, it is usually accepted that the role of the teacher
changes from the transmission of knowledge to being a guide and a counselor in the construction
of knowledge. As Benson points out, under this pedagogy, teaching focuses on identifying and
adapting the different processes that are carried out in the classroom as well as the content,
around individual needs, preferences and goals of students and is progressively involved in the
negotiation and decision-making processes that affect their learning (Benson, in Burns & Richards,
2012).

As expected, a student-centered model of teaching is intended to address the diversity of students,
promote academic accountability and active student participation, and foster the development of
self-directed learning skills. Some strategies that, through time, authors such as Rogers (1969),
Diaz-Barriga (2005) and Cobo (2016) have suggested to construct student-centered teaching
environments, are: solving real problems, providing learning resources, creating academic contracts,
designing research projects.

“The goal of learner centered teaching is to create learning environments that optimize students’
opportunities to pay attention and actively engage in authentic, meaningful and useful learning” (Doyle,
2011, p. 9). Teachers then, have a big challenge generating and suggesting those personalized
learning situations that enhanced knowledge building and skills.

**Heutagogy**

It is a term introduced by Kenyon and Hase (2001) to refer to self-determined learning in which,
in addition to having skills related to self-directed learning, are also identified abilities linked to
the social and professional adaptability of people. Blaschke (2012), mentions that heutagogical
approaches have acquired enormous value given the emerging technologies we have, which
consider student-centered teaching models as they promote student content development, self-
direction, and self-definition of learning paths. Blaschke points out that heutagogy promotes the
development of competencies and capabilities, understanding the difference between the two,
as follows:

Competency can be understood as a proven ability in acquiring knowledge and skills, while capability
is characterized by learner confidence in his or her competency and, as a result, the ability to take
appropriate and effective action to formulate and solve problems in both familiar and unfamiliar and
changing settings (Blaschke, 2012, p. 59).

Some of the traits that the author remarks that capable people possess are self-efficacy,
communication skills and teamwork creativity to apply competencies in new and unfamiliar
situations.
Cobo (2016), in his book “La innovación pendiente” (in English, “Pending Innovation”), mentions that heutagogy attaches particular importance to ways of self directed learning, passing from a predetermined the domain of knowledge, to the possibility of creating self forms of dialogue with different knowledge. In this sense, heutagogy has to do with the development of metacognitive skills in order “to be capable of learning by creating, reconfiguring, unlearning and relearning, connecting the old and the new, as well as the curricular with the extracurricular” (Cobo, 2016, p. 45).

The idea of integrating heutagogical approaches with learner centered teaching is to emphasize the different roles that students and teacher play in the model. While teachers are expected to be aware of the personal and group interests of their students to integrate them into the curriculum in order to guide and motivate better their students, these last are also working on being responsible and aware of their own learning process, their capabilities, challenges and strengths.

**Openness**

The term ‘openness’ in education has been present for many years, considered to provide flexibility, whether for admission to an institution, attendance to classes, completion of studies and even for the permanence in an academic program of studies. Some of the characteristics that Enríquez lists to distinguish open education are the following:

- It arises with the intention of offering alternatives of access to education to important sectors of society.
- It removes or relaxes organizational, geographical, temporal and even academic restrictions.
- It strongly relies on materials and study guides.
- It requires and promotes attitudes related to self-learning, self-responsibility and relative independence of the learner.
- Advisers or counselors may exist to resolve doubts.
- Learning occurs in isolation.
- Used in formal and non-formal education programs.
- It is more strongly supported in mass media (Enríquez, 2015, p. 2).

For the specific case of this model, the concept of openness focuses on the flexibility of access. Building open learning spaces, not only for students enrolled in the educational institution, but also to extend knowledge to other groups interested in the subjects, either to learn or to teach and share learning experiences and knowledge; digital technologies in this sense, play an important role.

As we have seen, although the four elements just described have been defined in different contexts, they all share common characteristics that appeal to curricular flexibility, the development of responsible, active and committed students (not only with their learning but with the very processes of learning something) and working with information and communication technologies. Under this scenario, it seems feasible to gather the four elements into one educational model that would combine formal and non-formal education through blended learning or completely online learning solutions.
Fractal, an educational model for the convergence of formal and non-formal education

In 2004, George Siemens introduced the connectivism learning theory to respond to the current context of study and work, where trends show an increasingly close relationship between both activities, because of the fast changing life cycle of knowledge, the need to learn continuously and constantly, the greater number of training options through informal education and, the transformation of thought by the presence of technologies and computer networks. In this theory, Siemens mentions that

learning is a process that occurs within nebulous environments of changing basic elements - not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside ourselves (within an organization or database), focuses on connecting sets of specialized information, and the connections that enable us to learn more are more important than our current state of knowledge (Siemens, 2004).

The process mentioned by Siemens, occurs every day when facing the study of a topic, either as part of an educational program or by personal initiative. We constantly seek information, examples and counter-examples of assumed positions, knowledge application environments, and third-party experiences, among others. The resources consulted are of different nature, which come from different spheres (academic, institutional, corporate, personal) and it is up to us to identify and select those that offer value and meaning for the interest we pursue. Having said that, there remains the concern to establish the way in which the learning process described by connectivism can be considered in educational institutions so that, on the one hand, it helps teachers and students to be aware of the role they play in the process just mentioned but, at the same time it also helps educational institutions to recognize the changing environment in which teaching and learning takes place and to consider it in its organization, policies and programs in order to acknowledge the learning that is acquired through different experiences and scenarios.

The Fractal concept

In the area of mathematics, fractal geometry refers to the specific geometry that arises from the theory of Chaos. Fractals are semi-geometric figures that have an essential structure, which is iterated at different scales, an infinite number of times. In other words, as Pappas describes a fractal is:

...a form which begins with an object -such as a segment, a point, a triangle- that is a constantly being altered by reapplying a rule ad infinitum. The rule can be described by a mathematical formula or by words. (Pappas, 1994, p. 49)

Figures 2 and 3 show two well-known examples of fractals called the Koch curve and the Sierpinski triangle. In the case of the first example, the rule that we will apply consists on drawing a triangle on each of the lines of the initial figure; the basis of the triangle occupies the third part of each line. As we can see the initial figure is a triangle whose basis occupies the third part of a straight horizontal line. After the first iteration, we obtain two triangles and a star shape. After the second iteration, each of the "old" triangles becomes a star shape figure and, each straight line has a new triangle on it.
On the other hand, the Sierpinski triangle is obtained by applying the rule of joining the midpoints of each side of an equilateral triangle. The initial figure is an equilateral triangle. After the first iteration, we obtain three new equilateral triangles inside the original one. After the second iteration, we obtain nine new equilateral triangles. With the third iteration, we get twenty-seven new triangles, and so on.

To describe Fractal, the educational model presented in this paper, an initial figure integrated by the four elements already mentioned is considered (concept-based curriculum design, student-centered teaching, heutagogy and openness). The iteration mechanism is determined by the continuous application of the educational model to the central element of itself: the concept-based curriculum design. This is because it is suggested that the study of each of the concepts that make up the curriculum of the course, when studied under the same educational model, give rise to the iteration of the initial figure. Moreover, if we allow the initial concept domain (the concept map that defines the relation between the initial concepts of the course) to be adapted by the working context and the specific interests of the students participating in that course, we obtain an indefinite number of iterations of the model. In this way, the Fractal model is represented as shown in Figure 4.
Fractal in detail

As mentioned before, the core element of Fractal is the concept-based curriculum design. The concrete way in which this model works is the following: we will name concept domain to the concept map that gives origin to a specific educational program; this map shows the fundamental concepts of the course in question.

The concept domain is the element that gives rise to the multidimensional study of a concept and to the analysis of its interrelation with other concepts, some of them proposed and integrated from the specific interests of each student and some other suggested by the teacher as he/she identifies concerns and learning opportunities. It is in this moment when the learner centered teaching and the heutagogical elements take place and, as a result of it, a personalized concept domain emerges.

Figure 5 shows an example of a concept domain that represents the starting point of a course that is the initial curriculum suggested by the teacher, and a second concept domain that emerges from the first one but it integrates those concepts that are of particular interest to a student. This second concept map would be a personalized concept domain that, among other things, also helps to establish a learning contract between the teacher and the student.
Just as the curriculum design is open and experiences modifications, the learning spaces are also open. New learning groups may be introduced and connected with this learning group, new teachers and experts might be invited to talk about specific approaches of a concept; new learning resources are expected to be suggested and used by both, teachers and students.

In this way, the depth, extension, and complexity of the personalized concept domain is determined by the student as a result of a self-determined study exercise that can be extended in time and place of study but which can also be repeated iteratively for each one of the concepts that form part of the concept domain in its different iterations thus, generating the property of self-similarity that we find in the geometric design of fractals.

Fractal, the educational model, resumes the principles of connectivism, in which the consolidation and maintenance of learning networks foster interdisciplinarity and continuous education, in a chaotic and rhizomatic model, to propose a concept-based curriculum design as the basis or starting point of the learning process.

Possible Fractal applications

Considering the elements of openness and heutagogy that conform Fractal, the following application examples are constructed in flexible environments in relation to the entry requirements and the curriculum of the course in such a way that benefit both, students enrolled in an academic program of the institution, as well as professionals looking for an update on a specific topic. In both cases there is room to attend a particular interest or approach, of the subject in question.

Example 1. Area of academic specialty

It is common to find in the curriculum of a career or degree, subjects that separate the theoretical part from the concept or, which isolate and separate the different perspectives that converge on the same phenomenon. For example, the degree in Pedagogy offered by the National Autonomous University of Mexico (UNAM), through the Faculty of Philosophy and Letters, has a curriculum organized by three curricular elements: subjects, areas and levels. The subjects are curricular units that have contents of theoretical, conceptual elements; of some moment of the historical process of education and pedagogy, of some aspect of the process of construction of pedagogical knowledge and of aspects of the pedagogue’s practice. The curricular areas are a set of subjects that account for a global process or a dimension of the problematic field and the levels refer to the set of horizontally organized subjects, integrating different levels of complexity in the development of content processing (basic, Intermediate and specialization (CUAED-UNAM, 2017).

In particular, the area of Didactic Intervention, at the level of specialization, is made up of optional subjects where the student is faced with a more complete application, either of educational planning and school management; the didactic intervention; popular education or curriculum development. A Fractal application would be to group in a proposal, the work of four theoretical-practical workshops, of the curricular area mentioned (namely Workshop of didactics 1, 4, 5 and 6), linked to the design of a didactic intervention, under a didactic approach that the teacher chooses at the time. In this way, the new course would support teachers of all educational levels, students and researchers of education, to conceive didactic interventions from the approach that is determined. Under this broad panorama of participants, it is natural to expect that the course will present different perspectives, needs and concerns, according to the different interests and personal situations of each of the members of the group which would promote the definition of personalized concept domains that arise from the initial
concept domain proposed by the teacher and the dimensions of particular interest that students have (historical epistemological, social, labor, to mention some). The fundamental concepts of the concept domain could be: teaching strategies, learning strategies, didactic materials, learning environments; in addition to those specific to the determined approach being addressed.

**Example 2. Multidisciplinary specialty**

Another common situation that is recurrently faced by a student and a professional is that which refers to teamwork with people who come from other areas of specialization other than the area of personal study. This implies understanding another way of working and conciliating, in the study of a specific phenomenon, the different problems that derive from each of the perspectives of the disciplines involved. A concrete example that can be mentioned is in relation to the study of a topic that has arisen in recent years in the area of systems and education: Learning Analytics. According to the Society for Learning Analytical Research, it can be defined as “measuring, collecting, analyzing and reporting contexts, in order to understand and optimize learning and the environments in which it occurs” (SOLAR, in Durall & Gros, 2014). Thus, when working on data analysis to understand and improve learning processes, it requires the intervention of systems researchers, mathematical modeling, learning evaluators, and instructional designers. As in the previous example, from the specific interests and contexts of each one of the group members, personalized concept domains arise from an initial concept domain developed by the teachers. Some of the dimensions that may arise are epistemological, applicative, technological and educational, to name a few. The fundamental concepts of the concept domain could be: data mining, mathematical modeling, teaching strategies, instructional design, and platforms for learning.

**Conclusions**

Fractal is a proposal that takes the principles of fractal geometry where, from an initial figure, to which an iteration rule is applied, an infinite self-similar figure is obtained. In this educational model, the basic figure is defined by four basic elements found in successful educational experiences in the world as in prospective education exercises. These proposals focus their educational models on curriculum flexibility and learner autonomy to achieve better student participation and commitment, while at the same time, seek to better serve the personal and professional needs of each student. Both components are found in Fractal through the concept-based curriculum and heutagogical approach proposed by the model, which together with the learner-centered teaching and guidance and the possibility of interacting with different groups and communities, give meaning to the constant re-definition of the conceptual domain with which a course begins. In this way, it is possible to move from the domain of predetermined knowledge to the possibility of creating personal forms of dialogue with different knowledge, from several disciplines, as Cobo (2016) mentions or, in other words, giving rise to a comprehensive and interdisciplinary study perspective in which online work and the use of information technologies play a fundamental role to connect with different resources, data and study groups. Moreover, in considering the potential that the technologies offer to connect the students with groups external to the educational institutions, we also do it the other way around; that is, external groups are also joining the academic work of the university. In this way, the options of university extension are expanded and formal education with the non-formal, are intertwined.

In this way, Fractal tries to open up new opportunities for educational institutions to explore alternatives to jointly carry out, more significant academic and continued educational programs for students, where formal and non-formal education take place at the same time. Under this model,
through concept-based and flexible curriculum design, the universities offer a divergent view of study that also gives value to interdisciplinary and transdisciplinary participation that occurs beyond the classroom.

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Mainstreaming use of Open Educational Resources (OER)
in an African context

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Abstract

The study derives from a multi-year project implemented by OER Africa. The project sought to understand how OER might be used as a catalyst for pedagogical transformation in African universities. Within a non-determinist and interpretivist theoretical framework and an overarching project methodology of participatory action research, the study made use of an analytical autoethnographic approach to capture and analyse data and to make recommendations. The approach was informed primarily by hermeneutics and systems thinking and involved multiple in-country engagements and the triangulation of information derived from document review, observation and iterative focus group discussions and individual interviews. The key finding of this study is the suggestion that engagement with OER is unlikely to move from being an individual to an institutional focus unless such engagement is aligned with the overall vision, mission and business model of the university.

Keywords: Open Educational Resources (OER); Africa; Open, Distance and e-Learning (ODeL); university business model

Introduction

This paper is based on a Doctoral study recently completed. The study derived from a multi-year project implemented by OER Africa to explore the potential of Open Educational Resources (OER) in support of pedagogical transformation in African universities. The project involved four institutions: Africa Nazarene University (ANU) in Kenya, the Open University of Tanzania (OUT), and the Universities of Pretoria and the Free State (UP and UFS) in South Africa. This study centred on ANU only, a private faith-based university located in Ongata-Rongai just outside of Nairobi, in the period 2013 to 2016, with a focus on the period 2015-2016, and was timed to inform ANU’s new strategic planning process from 2017.

The term OER refers to freely accessible, openly licensed, text, graphics, audio, video and multimedia assets that can be used and re-used for educational and research purposes. Such educational resources have been licensed for use and re-use in a variety of ways ranging from no conditions on re-use through to limitations on re-use such as for commercial reasons (Creative Commons, 2017; Littlejohn & Pegler, 2015; UNESCO, 2012; Wiley, 2006, 2008).

Some persuasive arguments have been made for engagement with OER (Butcher, 2011; Butcher & Hoosen, 2011). In addition, there is a growing body of evidence of such engagement, including in African contexts, (Haßler & Mays, 2014; Komba & Mays, 2014; Kernohan, 2012; Mawoyo, 2012; Moore, Preston & Butcher, 2010; Omollo, 2011a, b; Omwansa, 2015; Ooko & Mays, 2015). There are also predictions of increased engagement (Johnson, Adams, Estrada & Freeman, 2015; Johnson, Becker, Cummins, Estrada, Freeman & Hall, 2016). However, it has been argued that our understanding of OER and how they might best be used remains relatively under-theorised (Papachristou & Samoff, 2012), and this provided a justification both for the study reported on here as well as the wider project of which it formed a part. Currently, much of the literature available in
the African context comprises descriptive case studies rather than theoretical analyses, reflecting the emergent nature of engagement with OER in this context.

Initially the engagement with ANU focused on developing a supportive policy and capacity-building environment for individuals to integrate OER into specific Open, Distance and eLearning (ODeL) courses at the university and to publish revised course materials under an open licence. However, as the initiative progressed, it became apparent that there was need to revisit the institution’s overall curriculum planning and business models.

**Theoretical framework**

Ontologically the research was non-determinist in approach, and epistemologically constructivist-realist in orientation. It was noted that while there was evidence in the literature of use of, and reflection on the use of, OER in African contexts, little was known about the relationship between theory and practice and how the one might inform the other. It seemed that OER had the potential to impact positively both on what was learned and how, but it was not known how this might happen and the conditions necessary for it to happen. The study was therefore framed within a pragmatic paradigm and informed by non-determinist, interpretivist and ethnographic perspectives (Cohen, Manion & Morrison, 2000), which emphasise the need to engage iteratively with the evolving thinking of others. The educational orientation could be described as transactional, inspired by the writings of John Dewey (1910, 1929) among others, and strongly influenced by hermeneutics (emphasising iterative processes of meaning-making) and systems theory (emphasising the need to address the complex inter-relations between the parts and the whole, especially in an ODeL context) (Higgs & Smith, 2015; Kinsella, 2006; Letseka, 1995).

**Review of previous research on curriculum transformation in an ODeL context**

While accepting that the nature of what constitutes a curriculum is widely contested (du Preez & Reddy, 2014; Hoadley, 2012; Ornstein & Hunkins, 2004; Slabbert, de Kock & Hattingh, 2009; Slattery, 2006), this study adopted a broad conception of curriculum (following Graham-Jolly, 2003) which considers at least four dimensions as follows:

- The curriculum as product/plan – what an institution sets out to achieve as expressed in formal documents about what should be taught, how and when; how and when learning should be assessed; and how the curriculum should be resourced and supported;
- The curriculum as practised – what happens in classrooms or outside them because of teacher and institutional choices and circumstances;
- The curriculum as experienced – what each individual learner internalises and takes away from the educational experience;
- The latter being influenced by the hidden curriculum – the things that are learned that were never formally intended.

We can add a further dimension to this typology:

- The null curriculum – the curriculum that is not taught: what is left out and why? (Flinders, Noddings & Thornton, 1986).

Within the broad curriculum framework outlined above, institutions in Kenya and in Africa more widely, are subject to the same demands as in other parts of the world for programmes that are more flexibly designed for increasingly diverse learning needs and contexts in which open, distance...
and e-learning (ODeL) approaches need to be employed (Altbach, Reisberg & Rumbley, 2009; Blumenstyk, 2015; Evans & Pauling, 2010; Glennie & Mays, 2013). It was suggested to ANU, building on Educause (2010), Glennie and Mays (2009) and Lapovsky (u.d.), that designing curricula from the outset would create a model and supporting resources that could then be adapted, with varying degrees of additional face-to-face engagement, also for work-place-based and campus-based part- and full-time provision.

An extensive body of literature exists on the systemic nature of ODeL provision and the implications of changing elements of institutional subsystems on the whole system (CoL, 2001, 2004, 2005, 2009; Holmberg, 1995; Hülsmann, 2016; Moore & Kearsley, 1996, 2012; Perraton, 2000; Peters, 1998; Rowntree, 1992; Rumble, 1997, 2004) as well as the implications for human resource management thereof (CoL, 2004; Fullan, 1993, 2006; McMillan, 2008). The researcher had argued prior to the study that OER should be able to contribute to supporting these more flexible forms of provision which all require the developing, sourcing and / or adapting of appropriate learning resources (Mays, 2014).

Methodology and research questions

Given the theory of change underpinning its practice, OER Africa attempted to integrate a participatory action research (PAR) agenda into each of its institutional engagements as its primary method of critical reflection. The PAR process was necessarily open-ended, which meant that specific research questions and methodologies needed to be negotiated with the participants themselves. In the case of ANU, it was hoped that the research would provide insight into the following questions, amongst others:

- What kinds of pedagogical transformation are envisaged at ANU and within what timeframes are these changes expected to be introduced? How does this align with the OER community’s understanding of the transformative educational potential of OER?
- To what extent can use of OER constitute an effective catalyst in driving or supporting these envisaged pedagogical changes?
- In what ways, can a focus on pedagogical transformation serve to embed effective OER practices into mainstream institutional activities and systems, rather than these practices operating parallel to the mainstream?
- What opportunities already exist within ANU that can be used to drive this kind of pedagogical transformation and how can these opportunities most effectively be harnessed?
- What policy, procedural, systemic, cultural, and logistical challenges and barriers inhibit these changes within ANU?
- What strategies need to be implemented to overcome these challenges?
- What levels of institutional political support or championing are needed for changes made to become institutionalized?

As indicated by Figure 1, an iterative action research process was envisaged, enabling organizational change, and leading to key identifiable actions and outputs that were conceived, acted upon, reviewed and revised through ongoing discussion and debate with the relevant stakeholders. It was further intended that the lessons of experience that emanated from these processes should be shared more widely through appropriately open forums. The model was based on one developed by Zuber-Skerritt (1996, p. 99), building on the work of Lewin and Beer, Eisenstadt and Spector as reported in Cohen, Manion and Morrison (2000, p. 238). It should be noted that the process is iterative – reflecting leads to new planning, acting, observing, reflecting cycles.
The outer circle of Figure 1 was adapted from the original to reflect the key actions needed to integrate engagement with OER as a mainstream activity in curriculum and materials development and in support of transformation of pedagogy. The approach was grounded in processes of interaction with stakeholders in an ongoing critical conversation; hence it was a ‘participatory’ action research model designed to transform practice in a consultative and organic way. Continuous communication is a central feature of this type of engagement, allowing the researcher to “collect data in a non-threatening way” but it also requires the researcher to take a critical stance towards the taken-for-granted assumptions that informed past practice (Moyo, Modiba & Simwa, 2015, p. 71). It was also intended that lessons of experience from these processes should inform the discourse in higher education more broadly through publications, presentations and support to follow-up training activities.

Within the over-arching participatory action research methodology, there was need to identify a supporting methodology that would help to reconcile the researcher’s dual role as co-participant and institutional lead with obligations to meet specified project outputs. Cohen et al. (2000, pp. 3-34) explore the nature of research as inquiry and identify three broad paradigms within which a researcher might work: normative, interpretive and critical. From their discussion of the nature of these three approaches, an interpretive approach seemed most consistent with the nature and goals of the wider project of which this study formed a part. However, documenting this process in ways that would provide insights into the questions identified above, and fulfil ANU’s desire for a historical narrative of the ANU-OER Africa engagement, suggested a broadly ethnographic approach which is concerned with “how people make sense of their everyday world” (Cohen et al., 2000, p. 24). McMillan and Schumacher (2006) outline the nature of such an approach and conclude, “The final product is a comprehensive, holistic narrative description and interpretation that integrates all aspects of group life and illustrates its complexity” (p. 26).
Within this broader conception, the study adopted aspects of an auto-ethnographic approach. Ellis, Adams and Bochner (2010), characterise this specific approach as combining elements of autobiography and ethnography. This approach recognises, acknowledges and accommodates the researcher’s influence on the research process and how this is written up and shared (Vianna & Stetsenko, 2015). The researcher included a reflexivity statement as part of the study (Finlay, 2002), to articulate his own underpinning assumptions and how these had shaped his engagement with ANU. Given the needs of the wider project, the researcher adopted an analytic autoethnographic approach as explained by Anderson (in Pace, 2012, p. 5).

Ethical clearance was obtained from ANU itself, from the National Commission for Science, Technology and Innovation in Kenya, and from the University of South Africa.

Data collection and analysis

Over the course of 2013 to 2016, the researcher made seven in-country visits to ANU (five within the parameters of the research period 2015-2016) and facilitated and reported on several capacity-building workshops, focus group discussions, individual interviews, document reviews and observations of practice. In addition, an OER Maturity Index and Planning Tool was developed, trialed and used to inform reflection and planning and to act as a barometer of changing attitudes and activities with regard to engagement with OER. The researcher worked with members of senior management, the Institute for Open and Distance Learning and members of the teaching and support staff, who were purposively but collaboratively selected. Where data was collected from written documents, and spoken interviews in which participants stated their opinions of various key issues of an open-ended nature, these were analysed to identify patterns leading to themes and questions that could then be pursued further in a hermeneutic spiral of enquiry.

In any study involving the thoughts and practices of human beings, there is always the possibility of misunderstanding, misinterpretation and conclusions being drawn from inadequate data. In addition, within the field of education it is notoriously difficult to establish simple cause and effect relationships. Attempts were made to overcome these shortcomings by triangulating data and providing draft reporting and preliminary findings for comment within the community. In fact, a process of “crystallisation” (Nieuwenhuis, 2007, p. 81) is probably a better term to use than “triangulating”, since it could not be predicted at the start what shape the research and research findings would take. So rather than testing a simple hypothesis, the research involved an iterative process of trying to arrive at increasingly more nuanced understandings of a complex, multifaceted phenomenon.

The nature and purpose of each visit to ANU was negotiated in advance and a report on the findings of each visit was shared in the week following the visit, allowing ANU staff to identify any errors, omissions or misinterpretations. The various visits built on one another iteratively – in effect each plan, visit and report constituted its own action research cycle. In similar vein, the evolving draft chapters of the study were also shared with ANU for comment prior to being finalized.

Findings

Through the process of engagement outlined in the methodology discussion above, the following insights were gained into practice at ANU (the sub-headings in this section relate to the research questions identified earlier).
Pedagogical transformation

At ANU, an initial engagement with OER followed immediately from the initial introductory workshop. There was evidence not only of a willingness to use OER in teaching but also to produce OER among those involved in the initial engagement. The institution had already moved into the provision of distance learning and other forms of resource-based learning and had developed a customized Learning Management System (LMS) in the form of a Moodle platform called eNaz. The pedagogical transformation already underway at ANU was then from a teacher-contact-based form of provision increasingly to resource-based learning; the larger curriculum transformation issues included grappling with the demands of different modes of provision for different learning needs and contexts, and particularly appropriate use of ICT (Beetham & Sharpe, 2013). Sustained engagement with OER at ANU required attention to addressing factors in the wider institutional environment. The need both for an enabling policy environment and time to engage with support processes is consistent with findings of other studies such as Chae and Jenkins (2015), de Hart, Chetty and Archer (2015) and Miao, Mishra and McGreal (2016).

Catalyst

The ANU experience suggests that engagement with examples of OER can help educators think differently about content and ways in which to engage students more actively in the learning process. A key shift in the development of new and revised materials in the seven courses that were initially part of the review and redevelopment process was the inclusion of a greater number and kind of activities to guide students towards engaging more actively with the content. This is evident in one module that was completed and shared (Mtukwa, 2014).

Mainstreaming

OER Africa’s initial engagement with ANU was through the Institute for Open and Distance Learning (IODL). However, although the university invested extensively in its ICT infrastructure, and expanded the IODL office-space and staff, the core business model remained oriented primarily to campus-based provision. The recurring costs of curriculum and materials development and redevelopment, and the necessary quality assurance rigour to support the process, had not been factored into the university’s core business model and costing. Thus engagement with OER remained limited to the few individuals who were part of the initial workshops and who decided to continue to engage in their individual capacities rather than as part of a mainstream institutional process. However, as noted previously, the demand from potential ANU students is increasingly for more flexible provision that is not centred on the main campus in Ongata-Rongai. The growth in demand for part-time, workplace-based and distance learning places greater emphasis on resource-based forms of learning and hence on the potential of OER to avoid needing to create everything ab initio.

Opportunities

Three key factors converge to shape new practice at ANU – changing demand from a changing student profile, the existence of the IODL, with some practical experience of distance provision, and institutional commitment to integrating use of the moodle-based “eNaz” LMS into all forms of provision, requiring that all staff need to source and/or adapt and/or develop learning resources to support their teaching. What is then needed is to ensure that these factors inform the new business model and strategic plan of the university.
Barriers

The business model of the university did not adequately support growth in non-traditional provision. The IODL, which was identified in the current strategic plan as an engine for growth in student numbers, remained isolated from the mainstream practice despite the establishment of an intra-institutional advisory board, in that for most staff, engagement with distance learning, and OER integration, was considered something over and above the normal workload of teaching full-time students. There was need at the start to create a policy framework that would allow the sharing of ANU resources under an open licence. However, it was recognized that the development and subsequent publication of an OER policy needed to be part of a much broader debate on intellectual property rights and the extent to which the institution wished to engage with more open educational practices. It also became clear early on that a move towards expanded provision of ODeL, and towards greater use of eNAZ in contact provision, meant that job descriptions, performance management, training and support and related budgets would need to be amended to reflect the institution’s shift towards resource-based learning approaches and the centrality of materials development and review as a core job function and business activity. Related to both above, it was also clear that there was need to revisit the quality assurance process to have a clear sign-off procedure to ensure that only OER of quality would be integrated into ANU course materials and, concomitantly, only OER of quality would be published under the ANU name.

Strategies

All the issues identified above are subservient to the focus of the institution’s new strategic plan from 2017 and the development of an appropriate business model to support that plan. As part of this process, it was thought necessary to rethink the nature and role of the quality assurance unit. During the engagement with ANU, the quality assurance unit was staffed by one person only, who subsequently returned to their academic department, and the role was then taken on by an interim staff member with an administrative rather than an academic background. Such a unit needs both academic and administrative competences however, especially given the institution’s plan to seek ISO certification.

Institutional support

Unambiguous support for OER as part of a broader shift towards resource-based learning is also critical (Halfond et al., 2016; Sapire & Reed, 2011). In the latter part of the project, and in the absence of a full-time Director for IODL, this role was increasingly played by the DVC academic. With the appointment of a new Director for the IODL, some of this workload could be shared but it will be critical going forward that the new Director should feel that they have the support and resources to function effectively.

Discussion

Although ANU is a private institution, it must work within the prescripts of national policy. Although national policy acknowledged the potential of more open and flexible forms of provision, at the time of this study the emphasis of the regulatory framework was still on assuring the quality of campus-based provision (CUE, 2014 a, b). It is felt important that role-players like ANU, who are interested in ODeL provision, should begin to develop fora through which to influence national policy and regulation towards greater acceptance of ODeL provision, and to develop appropriate contextual
norms for good practice, as has been the case in South Africa (CHE, 2014; DHET, 2013, 2014; Welch & Reed, 2005). A commitment to integrating OER, as a matter of course, into resource- and activity-based flexible modes of provision then needs to be reflected in the institutional strategic plan and supporting policy framework, especially in the areas of intellectual property rights, human resource management, ICT policy, infrastructure and support and quality assurance mechanisms (among other things to ensure equivalent quality of provision across different modalities) (OER Africa, 2012). With a clear strategic and policy framework within which to work, it is important to identify and develop an appropriate business model to enable and support the intention set out in policy. A key component of the business model must then be costing and budgeting that reflects the features of ODeL provision, including budget for recurring learning resource development and review as well as integrated support (Hülsmann, 2016; Kanuka & Brooks, 2010; Rumble, 1997, 2004; Simpson, 2013).

When OER are to be employed as part of a drive towards a wider resource-based and ODeL strategy, it is important to give attention to developing the appropriate systems and sub-systems to support that move (Moore & Kearsley, 2012). Adala (2016) observes that the policy and regulatory framework in Kenya is now beginning to be more conducive to mainstreaming ODeL provision and integrating OER, with the notification of the intent to establish an Open University and with Kenya being a signatory to the Paris 2012 OER declaration. In addition, a regional office of Creative Commons Africa is based in Nairobi and a national OER policy is in process of development to align with Kenya’s ‘Vision 2030’.

ANU is now operating in changed circumstances and it was suggested that the institution should embrace the change in the opportunity provided by the need to develop a new strategic plan. It was further suggested that central to the new plan should be adoption of what Downes (2007) and Ehlers (2011) refer to as an “open ecology” which might be depicted as shown in figure 2.

An open ecology refers to the need for issues of openness to be addressed at the micro level of individual learning resources, through to the meso level of open methods of teaching and learning, through to the macro-institutional level of an open educational practices culture. Figure 2 illustrates

![Proposed open-ecology model](image-url)
the notion that ANU’s new strategic plan should continue to be informed by its faith-based vision, mission and values but suggests that the adoption of more open educational practices, in which collaboration and the sharing of intellectual property is encouraged, is entirely consistent with these beliefs and values and supportive of expanded provision of open, distance and e-learning, which embraces a wide range of more flexible forms of provision to suit different learning needs and target audiences. In such a context, the development and review of learning resources becomes a mainstream practice, part of every academic’s job description, and with support from the library in finding appropriate OER (Salem, 2016), it should be possible to make it standard practice that in developing new courses, a search for existing OER that might be adopted and adapted is always a first step in the materials development process.

However, the learning resources are only one part of a complex whole. We need to think much more systemically about the nature of appropriate education provision in a digital era and the challenges of the associated change (CHE, 2014; Fullan & Langworthy, 2014; Mehaffy, 2012; The World Bank, 2016). There is need for ANU to clarify the nature and role of the various sub-systems that support its teaching and learning mission and to ensure that all are coherently aligned. The key sub-systems requiring attention are thought to be:

- Curriculum sub-system
- Materials sub-system
- Learner support sub-system
- Assessment and certification sub-system
- Logistical and quality assurance sub-system
- National and cross-border provision sub-system
- Financial management sub-system (Du Vivier, 2010; UP, 2009; Welch & Reed, 2005).

Within this systemic framework, each programme will need to go through an appropriate design phase prior to implementation and then an implementation and review phase. This is illustrated in Figure 3.
As indicated in Figure 3, the interplay between learning resources, authentic formative assessment and student support is at the core of the mission and decision-making of a university committed to responding flexibly to changing learning needs. With many different role-players working in many different ways, there is then need for a robust but supportive quality assurance framework and system to ensure institutional readiness in terms of policies, procedures, systems and information, programme design aligned to different target audiences and learning contexts, as well as reflexive practice committed to continual improvement in programme implementation and renewal. It is felt that this will be more possible within an open institutional ecology (Figure 2) which is aligned with the institutional vision, mission and values.

A recent report by Inamorato dos Santos, Punie and Castaño-Muñoz (2016) suggests that there are ten cross-cutting dimensions that will support the opening of educational opportunities: six are considered core and relate to being more open about content, pedagogy, recognition, collaboration, research and access; four are considered transversal by making the first six possible and comprise leadership, strategy, quality and technology. These dimensions underpin the various sub-systems that have been identified and discussed in detail in the various reports prepared for ANU during the process of engagement.

**Conclusion**

The study reported on here arose from a multi-year project that was initiated by OER Africa with support from the Hewlett Foundation. As noted in the discussion, engagement with ANU started with a review of its distance education offerings and an exploration of the potential of OER to add quality and save time in updating these programmes, but evolved into a conversation about the university’s overall curriculum and business models. This is a conversation that will need to continue as ANU moves into its new strategic planning and implementation phase from 2017. There is growing demand for more flexible offerings from ANU (as with many other universities in Kenya) and this suggests that ODeL should become central to the institution’s business model rather than an adjunct to a core business model based on contact provision. Since the provision of appropriate learning resources is one of the central pillars of ODeL provision, it seems logical to make engagement with OER also central to the business model. However, this in turn implies becoming more open and collaborative about intellectual property and practice generally.

It is acknowledged that this study focused on a single institution in a single context and there were far too many singular variables for any conclusions to be drawn of a more general nature. However, at least some of the issues raised with respect to ANU did occur in discussions related to the other three institutions involved in the larger project. The key finding of this study, therefore, is the suggestion that engagement with OER is unlikely to move from being an individual to an institutional focus, in a context like that of ANU, unless such engagement is aligned with the overall vision, mission and business model of the university. This is a suggestion it seems worthwhile to explore in other contexts.

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Student Views on the Cost of and Access to Textbooks: An Investigation at University of Otago (New Zealand)

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Abstract
The rising cost of textbooks is influencing students' choice of courses, as well as the quality of their learning experience once they are enrolled in a course, according to recent studies. This paper builds on those studies by exploring the possible effects that textbook costs may be having on study behaviours of students at one New Zealand tertiary institution: University of Otago. Perceptions of undergraduate students (n=811) about cost of, and access to, textbooks and possible influences on their study behaviours were gathered through a questionnaire. Results showed that students: are more likely to buy textbooks than access them through libraries; experienced purchasing expensive textbooks that were rarely used; questioned the value of textbooks; described alternative resource-seeking behaviours; and are heavily reliant on alternatives suggested by lecturers. Perceptions about affordability and academic value, access issues and consequential influences on study-related behaviours and attitudes are discussed.

Keywords: textbooks; cost; access; higher education; student perceptions; student behaviour

Background to the Study
The traditional print textbook has been regarded as the foundation for advancing learning, designed to provide an authoritative and pedagogic version of an area of knowledge, according to the community’s or society’s beliefs about what is important for students to learn (e.g., Lowe, 2009; Williams, 2014). Ideally, textbooks serve to guide discussion, frame issues, illustrate processes, identify critical questions and, thereby, enrich the learning experience.

At the University of Otago in New Zealand, textbooks remain a critical component of many courses and academic programmes, with anecdotal evidence suggesting that there is a tendency to rely on traditional, purchased textbooks rather than, or in association with, other resources including digital resources and e-books. From our experience, the choice of required textbooks tends to be made by lecturers and others involved in designing courses. Depending on the course, those “others” can include programme teams and departmental academic boards, all of whom would be influenced by their perspectives and demands made by disciplines or professions. Usually students have no involvement in this choice, even though they are directly affected by it. Cost of purchasing the chosen textbook is the most obvious impact on them but alongside this is access: libraries can provide copies.
via high-demand services when necessary, and copyright licensing also allows excerpts to be made available via password-protected systems but each of these options is limited and may not meet demand.

Evidence from outside our context indicates that the cost of textbooks is having a negative effect on student behaviours (e.g., Martin, Belikov, Hilton, Wiley & Fischer, 2017; Jhangiani & Jhangiani, 2017; Senack & Donoghue, 2016). The problem is serious enough that it is not only influencing students’ choice of courses but also their academic achievement (Hilton, 2016; Martin et al., 2017; Senack, 2014). Researchers argue that one alternative to the traditional textbook is the open textbook; one benefit being that they are free and readily accessible (Hilton, 2016; Jhangiani & Jhangiani, 2017; Martin, et al., 2017). (Erroneous) assumptions often underpinning such claims include: that all students are connected; that open textbooks are free; and that open textbooks are digital only.

The constantly changing nature of higher education means that there has been a dramatic increase in enrolment numbers at tertiary institutions (http://data.uis.unesco.org), with students from greater ranges of academic levels and backgrounds than in the past. Inquiry into students’ experiences of entering higher education has become the focus of much research over the last two decades, with universities addressing specific transition needs that focus on both social and academic support (e.g., Leathwood & O’Connell, 2003; Scanlon, Rowling & Weber, 2007; Sotardi & Friesen, 2017). As part of this, university staff, such as librarians, express concerns about the ability to provide the needed wide range of suitable resources, including textbooks (e.g., Werner, 2014) to meet needs of courses, staff and students. Additionally, each institution will have its own sets of goals reflecting expectations, resourcing, and policy, determined at a number of levels from government to individual teacher. These institutional factors flow through to students’ experiences as well as their perceptions about learning and study in higher education; the place, value and role of textbooks being one part of those experiences.

Then there are the textbooks themselves: what they are; how they are used by teaching staff within courses and by students; where they originate; and their relevance to a course (e.g., as discussed in Weller, de los Arcos, Farrow, Pitt & McAndrew, 2015). The nature, intentions, structure and content of a course, including teachers’ values and pedagogical beliefs, and courses’ expectations and opportunities to engage and interact with learning resources will influence student responses and approaches to their study (e.g., Entwistle, 2000). Added to this is the broader textbook market environment. This factor is not new (e.g., see commentary in What is a textbook?, 1924), with publishers’ behaviours influenced and determined by commercial interests. These behaviours include the regular publication of new editions and the continually rising costs of academic publishing (e.g., Larivière, Haustein & Mongeon, 2015). Students, teachers and institutions are subject to these costs and must either accept them, or seek other avenues through which to source resources to support learning, teaching and research.

The context of the aforementioned studies is different in many ways to those of our New Zealand higher education environment. In order to investigate the situation in our institution, while we took the outcomes of those studies into account, it was important for us to explore the topic more widely so as to determine whether the same sort of impact reported in the North American-based studies is present in our country, New Zealand. For us, the key question was whether the cost of textbooks is affecting student study choices and behaviours. Associated with that, is the effect a negative one?

This paper presents part of a larger investigation into these questions to contribute to an ongoing search to explore the extent to which textbook cost and access might be developing into a systemic barrier to student learning. Reflecting a focus on students making the transition to higher education from school, we also wished to explore if there were any differences between experiences reported by first year students and those in second/third/fourth years.
Design and Methods

The study was undertaken at the University of Otago, New Zealand: a research-intensive institution within a tertiary education environment where there is a legislative requirement that teaching and research are closely interdependent. That legislation does not include any reference to textbook selection, leaving such academic decisions to those most closely involved with teaching and administering courses: usually teachers, and other discipline/professional experts.

Our study context differs from that described in the Senack (2014; Senack & Donoghue, 2016), Jhangiani and Jhangiani (2017) and the Martin et al. (2017) studies. Our study was conducted on one campus of one institution in New Zealand. The Senack study was conducted across over 156 different campuses of different institutions in North America; and the Jhangiani & Jhangiani study included students from across institutions involved in the BC Open Textbook Project in Canada. While the Martin et al study was undertaken in one US-based institution, it included staff views as well as those of students.

Ethics approval was attained through the institutional ethics committee. The research was a survey research/perception-driven study (Fowler, 2014). The principal data source was an online questionnaire.

Setting

At the University of Otago in 2015, there were 18,421 equivalent full-time students, including 4,171 students undertaking postgraduate studies (University of Otago, n.d.). Courses and programmes are offered in Commerce, Health Sciences, Humanities, and the Sciences. This study took place at the University’s primary campus in Dunedin.

In New Zealand, students have access to New Zealand student loans and allowances schemes – the latter being means-tested – for course fees and living costs; in addition, NZ$1000 per annum may be accessed for ‘course related costs’ (Ministry of Social Development, n. d.). These funds are accessed by just under three quarters of eligible students (Ministry of Education, 2015). However, actual course costs vary and course-related costs are not limited to the purchase of textbooks. This means that there may be a difference in the influence that the cost of textbooks is having on New Zealand students compared with those reported in the US-based studies mentioned earlier.

Data sources and procedures

The survey from Senack (2014) was used as a starting point for the development of the survey for the current study. Ensuring the suitability of the survey instrument for use in our context involved an initial draft being “tested” with three focus groups of volunteer students, purposively sampled (Palys, 2008), drawn from the 2015 Class Representative group (called “Class Reps”) (n=811). Class Reps are students who have volunteered to represent their peers by providing feedback on their peers’ course experience to the responsible teaching department; suggestive of high engagement with study and a tendency towards responsibility and/or leadership. As less than five per cent of students become Class Reps in any year, it is acknowledged that, while not representative of the full student demographic, the nature of their feedback would be rich and relatively easy to gather. Twenty-five Class Reps from across the disciplines were selected.

The feedback from the focus group sessions informed the development of the final draft of the survey, which was generated using Qualtrics (https://www.qualtrics.com/) software, for which the University has a licence. (See the core questions in the appendix.) The invitation to participate was sent to the target group, the Class Reps (n= 811), via email. The survey was open for two weeks in mid July 2015, with one reminder being sent during that time. An incentive was offered in the form of ten $50 supermarket vouchers.
Analysis of data

Of the 811 Class Reps who were invited, 239 responses were received (29.4%); 233 respondents completed the whole survey and six did not. This means that earlier questions in the survey have a slightly higher number of responses than those at the end of the survey. Aggregated summary data were generated from the survey and analysed by the research team.

One of the research team carried out an initial assessment of the questions that produced statistical data. This was then presented to the rest of the research team for verification and further analysis. For free text responses (Q3, Q6, Q10 and Q22), two researchers on the team independently analysed the raw data to identify common themes using keywords. The results of these independent analyses were then compared, and through further whole team discussion, were refined into four intertwined common themes: affordability; access; perceptions of academic value; and behaviour/attitudes.

Findings

This section presents the findings of the analysis, grouped into two areas of focus: affordability and accessibility behaviours, with each in turn revealing perceptions about value and general experiences, attitudes and behaviours related to textbooks.

What do students spend on textbooks?

The graph in Figure 1 shows the amounts the respondents said they spent on textbooks, in answer to Q1 (238 responded to this question). More than half (137 or 58%) said that they spent less than NZ$250, with another 20% or 47 indicating no spending at all. Spending above NZ$500 was about one in five students (44 or 18%). The ranges, at NZ$250 intervals, enabled calculation of a minimum and maximum amount that respondents spent on textbooks, a total of at least NZ$43,941, or at most, NZ$91,500 (median=NZ$67,720.50). The average spent per respondent therefore was between NZ$184 and NZ$384 (median=NZ$284). (As a point of comparison, the weekly student living allowance is NZ$170).
These data were considered in conjunction with years of study (Q14). The chart in Figure 2 shows the breakdown spending by year of study.

![Figure 2: Breakdown of Spending by Year of Study](chart.png)

The pattern in each year is broadly similar, with spending concentrated in the lower ranges. However, first year students, in blue, spent the most on required textbooks, with fewer of them spending nothing (n=4 or 6% of all first-year respondents) and more of them indicating higher levels of spending, as evidenced by the blue line being higher on the right side of Figure 2. Over one-third of first year respondents spent more than NZ$500 (15%, 18% and 4% reported spending of NZ$501-750, NZ$751-1000 and NZ$1001-1250 respectively). Second year students, in orange, shadow this pattern of spending at slightly reduced levels. By third, fourth and fifth years there is a drop in total spending. In each of these categories: around one-third spent nothing; most spent less than NZ$250 (between 74%-82% reported NZ$0-NZ$250 of spending); a few spent between NZ$251-500 (13-16% of respondents); and only 8 individuals out of 105 (8%) third, fourth or fifth years had spent more than NZ$500. Compare this with the 37% of first years who spent more than NZ$500. This could suggest strategic spending of resources as students gain more experience in study at tertiary level, a theme that did emerge during the focus group testing of the survey tool. However, there could be other reasons for this. It should be noted that degree structures are flexible at the University of Otago. A student could be taking an elective first level course and yet be in the third year of study.

The influence of the cost of textbooks on student decisions

Linked closely to cost and affordability of textbooks is their perceived academic value for students, especially in terms of the influence of the cost of textbooks on study decisions. These views
were gathered principally through survey questions Q2 & 3, Q4, Q9 & 10, along with comments in responses to Q22.

In one of the most clear-cut results, 95% of respondents (226) indicated that they had not decided to withdraw from a course or not to enrol in one because of the cost of textbooks (Q2). Only 5% (12 respondents) indicated that they had made conscious decisions and/or had given serious thought to the cost. For example (note that all quotations are reproduced verbatim),

*I didn’t withdraw, but I seriously considered withdrawing from [course] as the textbook was NZ$70.00 which I know is not expensive in comparison to other subjects but for half a year and the size and content of the book I didn’t think it was worth it.*

Others rationalised their spending or their decision not to spend money on textbooks. For example,

*Felt that if I could not find an alternative to find the cash to be able to complete the learning criteria of the course […] I would then wait and work a bit longer just to buy the recommended book, especially if the lecturer or course provider stated that the newer edition was preferable or that they would be referring to the newer edition, than the previous years.*

*I couldn’t afford the textbook or justify spending that much on one book which I would use for one semester so chose not to.*

This low number of respondents who stated that their course choices have been impacted on by textbook cost is in marked contrast to the result in the US PIRG study (Senack, 2014). In that study, 48% of respondents indicated that they did alter which classes they took based on textbook costs, either taking fewer or alternative courses (Senack, 2014, p. 12). This could be reflective of the differences in methodology between our survey and the Senack study (e.g., the data collection method was quite different) and indeed differences between US and New Zealand in the nature and requirements of courses and processes involved in enrolling and withdrawing from courses. It must also be pointed out that the respondent group in the current study was not necessarily representative of the wider student population of the University (see Design and Methods section, above).

**Perceptions about access and effect on academic performance**

Building on these results, an examination of responses to Q9 provides some more insights into the nature of “access” as viewed by respondents, and their perceptions of negative academic effects due to lack of access. In Q9, “access” was intended to convey either having/owning the textbook or having ready access to a copy, either provided via a learning management system (LMS) or through a library service.

While studies elsewhere, in quite different educational settings, have indicated that very high proportions of students reported feeling negatively-affected academically by lack of access to textbooks (e.g., Buczynski, 2007; Senack & Donoghue, 2016), it was still surprising to see 49% of the respondents reporting that they either ‘definitely’ or ‘probably’ felt affected negatively (see Figure 3). More students felt negatively affected than those who said they had not, with 41% suggesting that ‘probably’ or ‘definitely’ they had not been affected. This question received 10% ‘I don’t know’ responses.
There did not appear to be much difference according to subject area. Neither was there evidence of any strong correlation between year of study and being affected by lack of access to textbooks. As discussed above in relation to Q2, respondents did not report that they would not take a course or withdraw from one because of textbook cost. However, deciding which course to take (Q4) is more likely to be affected, as shown in Figure 4. A total of 43% of respondents suggested that cost ‘rarely’ or ‘sometimes’ affected whether to take a course. Nevertheless, just over half (53%) said it was ‘never’ a factor.
Examining these overall results in the light of those who felt they have been negatively affected academically, as shown in Figure 5, for those respondents who felt affected (shown in the orange line) cost was more likely to be considered when deciding which courses to take, than for those who probably did not or definitely did not feel affected. Once again, the results of this question may reflect the generally positive personal attributes of the respondent group.

![Figure 5: Textbook Cost and Course Choice - Comparison of Affected and Not Affected Academically](image)

The orange line in Figure 5 shows that the number of respondents who indicated that lack of access has 'probably' or 'definitely' had a negative effect on them academically (Q9); the blue line shows those who did not report negative effects. This demonstrates a slight propensity for those who felt affected to be more likely to consider cost when deciding which courses to take. Where cost was 'never' a factor in course choice, 62 respondents felt unaffected by lack of access as opposed to 49 who did; those for whom cost was 'sometimes' a factor in course choice, were three times more likely to indicate they felt negatively affected academically. A comment in response to Q3 provides an example.

*The cost outweighed the need to take the [course] as their were other [courses] available that did not require me to purchase a course reader or expensive textbook.*

In the free text comments throughout the survey, 31% of respondents (76) stated that there was academic value in having required textbooks, even though none of the questions specifically asked them to reflect on this. The comments reflected the positive value of textbooks as well as students' perceptions of poorer academic performance had they undertaken their study without required textbooks.

*For a short time, I went without a textbook due to its price. After seeing myself fall behind I purchased it and began to catch up once more.*

*It's definitely mentally stressing to have a lecturer tell you to read a page or two which may not even be that important, because you don’t know what those pages’ content is because you don’t have the textbook. It feels like you’re slipping and being left behind and not on top of things.*
Perceptions about value

It was, however, unclear whether some of these comments about “academic value” expressed the view that, simply, it is good to have the textbooks that are required for a course, as in the comments above, or whether the comment reflected a more fundamental or generalised belief or principle about academic value, as in, for example,

The textbooks are absolutely essential for understanding material.

Textbooks do provide more valuable information than random online resources and it’s more relevant to the lecture materials.

Twenty-nine individual respondents felt that textbooks were not value for money, explaining that they were high cost items that would only be used for a short period of time.

The number of times we actually get referred to a textbook or asked to read a chapter don’t make it worth the money it costs to buy a textbook. I got one in first year and I have looked at it once - apart from that everything else I need is online or I can get the same information in a different book.

In responses to Q10, 47 comments from a total of 39 individual respondents identified affordability of textbooks as a key concern. Comments included those connected with finding textbooks expensive but still buying them; finding alternatives to new textbooks that were less satisfactory, such as older editions or high demand and course reserve library copies; and choosing not to take courses because of the cost of textbooks. For example,

I feel like I am putting my grades at risk because I refuse to pay such ridiculous prices for textbooks.

Most assigned textbooks are on course reserve, and only being able to get a book out for an hour means not being able to go further than the library to read it and strangely, the library isn't always the most calming place to read a book.

Only one respondent contemplated, but did not action, withdrawing from a course because of the cost of the required textbook. Eleven other students reported that the cost of textbooks was a deciding factor when choosing their course of study. A typical comment was, “I can't afford to buy the textbook, so essentially I can’t take the class.”

Further connections can be made between the responses discussed above and behaviours and attitudes about textbooks, and their accessibility. These connections are discussed in the next section.

Access behaviours

The survey asked respondents to indicate their behaviours in relation to gaining access to textbooks, other than buying them. The specific questions on access behaviours in the survey included Q5, Q7 & Q8, and Q22.

The accessibility of resources

Forty-eight free text comments in response to Q6 and Q8 referred to accessibility of physical and online resources. Half of these comments identified a lack of text availability, including limited textbooks being available to borrow through the Library and available for purchase from bookstores. Examples of comments of this type included:
I am worried about the availability of the textbook I need. Particularly during exam time, I like to study from the book and need to know for sure that I can access it.

Often they’re on course reserve so I can’t get them out (or not for very long) or there aren’t enough copies. Sometimes it’s because it’s easier to have my own copy to highlight or make notes in.

While six students stated that the Library’s online and physical resources met their academic needs, eight students asked for increased availability of online textbooks and e-resources, for example,

I would like to see an increase in the online availability of textbooks. In this day and age, it is so much more efficient to carry a laptop containing a number of books rather than the book itself. It also saves time when searching for key terms or topics.

**Behaviours as students seek to gain access**

Insight into the various behaviours of respondents as they seek to gain access to textbooks is provided by the responses to Q5, presented in Figure 6. This Likert-style question presented them with a five-point range from ‘never’ to ‘always’.

Figure 6 shows that a reasonable number of respondents do still buy print copies, with 43% indicating that they do this either ‘most of the time’ or ‘always’. Breaking purchase of books down by subject, using demographic subject area data from Q16 and Q17, showed broadly similar behaviour across the different disciplines. As for buying electronic copies, this is not (yet) particularly common, and would depend on availability: 72% said they ‘never’ or ‘rarely’ do this; only 7% said ‘most of the time’ or ‘always’. Certainly, this is far less common than buying ‘my own print copy’, either new or ‘second-hand copies’, or getting access ‘through the Library’. In both these cases, results were similar, and indeed comparable to buying ‘my own print copy’, though purchase is still slightly more common.

Responses to Q7 are presented in Figure 7, where respondents were asked to indicate what they did if they did not purchase their own copy of a required textbook.
When they do not have the required textbook, respondents indicated that they rely very heavily on resources provided by lecturers, either through the LMS (e.g., Blackboard) or the Library course reserve service. 77% per cent of respondents (187) indicated that they use these systems either ‘always’ or ‘most of the time’ when they do not buy a required textbook. Only 7% (16) ‘never’ or ‘rarely’ used them. The following comment in response to Q22 provides some illustration:

“It’s great having everything you need for course reading online through the Library. If every reading I had to do was done like that, it would make my life easier in terms of time management and for others, cost.

The next most common alternative to purchase of a required textbook is ‘free, alternative online resources’, with 48% of respondents (112) indicating they do this ‘always’ or ‘most of the time’, with a further 29% (68) doing this ‘sometimes’. ‘Doing without’ is relatively common, with just over a third (34%, 78) indicating that they do this ‘most of the time’ or ‘always’ when not buying their own copy of the textbook. Students commented that

I think prices really influence students and if it’s too expensive they’re more likely to not buy it and rely on friends or just do without, and it of course reflects badly on grades.

Text books are crippling expensive and usually not worth the price and are debatable for their educational value which forces student into using alternative study aids. This will result in student relying on textbooks less in favour of more effective learning tools such as Google. Google is a far more valuable education tool, not to mention more cost effective.

For each of the questions already discussed about habits when they do not buy the textbook, respondents indicated relying on those habits more than seeking alternative resources in the Library, where only 29% of respondents (68) indicated doing this ‘always’ or ‘most of the time’. Even going without is slightly more common than finding alternative resources in the Library. Borrowing or copying from a friend was considerably less common; downloading from file sharing...
sites was clearly the least common activity, with more than half of respondents reportedly never doing it.

Some of the difficulties of using the Library resources, seeking alternative ways to source textbooks and even difficulties when trying to purchase the textbook are illustrated in this comment:

Textbooks are often very expensive, which increases the difficulty of access. There are sites online where you can buy them for much cheaper, but they take weeks to arrive - which then puts you behind the rest of the class. Library access is difficult at times, particularly if you live far from campus or they are kept in course reserve.

In summary, respondents said that they tend not to factor the cost of textbooks into course selection, and it is rare for them to withdraw from a course because of the cost of a required textbook. However, they frequently feel textbooks reflect very poor value, which is considered not only in purely financial terms but also in terms of academic value.

Discussion

This study found that the cost of textbooks does not seem to affect choice of course at all; this result is contrary to the Senack (2014) and the Jhangiani & Jhangiani (2017) studies. Possible reasons for this may include the existence of the course-related costs that are part of student loans in New Zealand, or that for many courses at the University of Otago, minimal information is provided before enrolment. Limited information thus inhibits student ability to make decisions about course choice, based on textbook cost. Added to that, when courses are compulsory, often because they are part of an externally credentialled, professionally-oriented qualification, such as Medicine or Teacher Education, students cannot withdraw or make changes to their programme. This means that students cannot choose to enrol or not enrol in courses on the basis of textbook cost or accessibility. Where first years are concerned, their limited knowledge about higher education means that they are probably more likely to follow recommendations made to them about such things as purchasing textbooks, without being in a position to critique the expectation or to make a judgement about how best to find out how "set" a set textbook actually is. This situation may have been one reason why first years made up the group reporting spending the highest amount on textbooks in this study.

Some students expressed a view that textbooks have limited “value” – value for money and/or academic value. Respondents reported purchasing expensive textbooks that were rarely referred to by lecturers and/or used for one course and no more. Alternatively, many students expressed limited value (for money), especially when they had experienced minimal direct need for textbooks they had bought in the past. Despite these views, many students held the view that textbooks, at least in principle, did have academic value. In addition, they saw the benefits of having access to their own textbooks that they had bought.

Participants in this study reported that they do seek alternative resources and other ways to access textbooks when cost is considered a factor. Students reported relying heavily on alternatives to essential textbooks, particularly from lecturers. Taking the form of materials that lecturers provide access to, for example, the learning management system, students also reported searching online for supplementary resources. While many acknowledged the ability to access library copies, the limitations, including, availability, inability to make notes on the text, and limited loan time, were highlighted. Student access to textbooks is restricted in the sense that (a) resources provided electronically rely on licensing that allows copying of this nature, that is, either resources must be
openly licensed or they must be covered by a blanket copying licence or by library subscription; and (b) physical course reserves are, by their nature, limited to the vagaries of demand at peak times.

When the value of purchasing textbooks is brought into question by students, leading them to engage in alternative resource-seeking behaviours such as those revealed by participants in this study, teachers should be concerned. While information literacy skills are important for students to develop, the sourcing of high quality information as an alternative to a set textbook, is not straightforward. Students, especially in their first few years of university study, are not generally experienced and knowledgeable enough about a discipline area to be able to engage in the high level of critique that is needed to inform choice and use of information through the alternative sources they find. Lecturers who select appropriate, accessible and affordable textbooks for their courses may play a key role in facilitating positive academic outcomes for students and reducing the likelihood of students accessing inappropriate or inadequate alternative resources.

This suggests another issue, which is related to course development and design, incorporating the decision-making involved in choosing which textbooks should be accessed and which textbooks are essential. Each lecturer and course team will approach this differently; with many decisions being based on lecturers’ views about education, textbooks and their place and role in courses, teaching and learning. The process can be unique to individual lecturers and so will vary from course to course. Students usually have minimal or no exposure to those decision-making processes. The only decision that they can make is to either follow the directions of lecturers to buy the set textbooks, or to take it upon themselves not to buy the textbook and seek alternatives. Having said that, the consequence of not buying or having access to essential textbooks is a perception of the negative impact this has on academic performance. While this study is based on self-reports and therefore highlights expressed perceptions only, it is of concern if students view that their academic success is being impaired because of their inability to afford or have access to textbooks. Also of concern is that they struggle to cope without buying the text, only to sometimes buy it anyway because of difficulties in gaining easy access.

Conclusions

The overarching intention of this study was to gain a better understanding of the student point of view about textbook cost and access within our educational setting, with an interest in the reported behaviours of our first year cohort.

The results of the study suggest strongly that the position of students where textbook purchase is concerned needs to be acknowledged and recognised: their views and their contexts in terms of their financial situation and their perceptions of the monetary and academic value of textbooks. In addition, interestingly, the study highlights that first-year students tend to spend much more on textbooks than students in each of second, third and fourth years. The latest report from the PIRG (Senack & Donoghue, 2016) and from Jhangiani and Jhangiani (2017) say that students are experiencing financial difficulty because of the cost of textbooks. Those authors argue that the cost of textbooks should be reduced and that other options, such as open textbooks, should be given serious consideration. However, the authors of the current study ask the question, is the traditional view of the textbook being the important resource that it has been perceived to be in the past, still viable? The content within a textbook may be invaluable, but the way it is presented and made accessible has changed and continues to change with ongoing developments in digital technologies. Teachers have a responsibility to acknowledge such changes and to seek to understand the position of students within the changing university learning environment.
More specifically, it is important for lecturers and course designers to accept the changing nature of information provision. There is a wide variety of options available to source high quality resources to support courses, teaching and learning; options other than textbooks that are of high monetary cost to students and fraught with access difficulties. Granted, the introduction of different options for provision and access of resources for students is not necessarily straightforward. As Brown (2013) notes when commenting upon the use of e-textbooks, as one possibility of an alternative to hard copy textbooks, "just because we can do something does not mean we should" (p. 220).

There are many constraints and barriers inherent within any complex institutional environment and broader student learning experience and context. Access and cost, along with institutional and related teaching, learning and support systems (e.g., library, bookshop, Internet access) are some of the variables that need to be considered in the process of providing learning environments and experiences that are satisfying for students.

This study prompts further investigation and action to contribute to ongoing efforts at the University of Otago and beyond to gain a deeper understanding of those variables. Future research may include modifying the survey instrument for different institutions or for defined groups of students. A study such as this is a way to prompt conversation within an institution about teaching, learning, course planning and the explicit support that students need to assist learning how to access and evaluate open and other resources. Continuing the exploration of related issues and topics suggested by this study will ensure that, informed by the student voice, universities can better understand textbook practices and the possible influence that these may have upon their students’ sense of achievement and success.

References


*Open Praxis*, vol. 9 issue 4, October–December 2017, pp. 403–419
Appendix: Survey

(https://figshare.com/projects/Textbooks_cost_access_University_of_Otago_Student_Survey_2015-16/17474)

For the purposes of this survey, think about texts/textbooks that
- are "required," "prescribed" or "essential" for your courses;
- you have to pay for yourself or access through the library; and
- are either print or electronic.

Don't think about textbooks that are:
- optional texts, textbooks or readings; or
- 'course readers' or 'course packs' (which you might pay for but this only covers the cost of copying)

Q1 About how much did you spend on textbooks *this year* (print and electronic)?
Q2 Have you ever decided against taking a course because of the cost of textbooks?
Q3 Tell us about that decision.
Q4 The cost of textbooks is a factor in deciding which courses I take:
- Never
- Rarely
- Sometimes
- Most of the time
- Always
- I don’t know
Q5 Indicate how often you do the following in relation to required textbooks
- I buy my own print copy
- I buy or rent electronic copies
- I sell or give away textbooks once the course is finished
- I access required textbooks through the library
Q6 If you don’t use library copies, what are the reasons why?
Q7 What do you do if you don’t buy your own copy of a required textbook?
- I just do without
- I rely on other resources provided by my lecturer
- I find other readings by myself
- I use free, alternative online resources
- I borrow the textbook from a friend
- I copy from a friend’s textbook
- I download from a filesharing site
Q8 Tell us about any other method you use not covered in the options above.
Q9 Has lack of access to textbooks had a negative effect on you academically?
- Definitely yes
- Probably yes
- Probably not
- Definitely not
- I don’t know
Q10 Please describe how you think lack of access to textbooks affected you academically.
Q11 Which type of tertiary institution are/were you enrolled at? (Check all that apply)
Q12 Please describe the type of institution
Q13 Name of institution(s)?
Q14 How many years of tertiary study have you done (including your current year)?
Q15 Your gender
Q16 Your subject area(s)
Q17 Please describe your Other subject area(s)
Q18 How you study (mode)
Q19 Do you have a disability that affects your study?
Q20 Are you a native speaker of English?
Q21 What is your ethnicity? (Choose up to three)
Q22 Do you have any other thoughts or comments to make that weren't covered in other questions?
Learning the psychology of the tip-of-the-tongue phenomenon through on-line practice

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Abstract
Psychology undergraduates can benefit from direct experiences with laboratory procedures of psychological phenomena. However, they are not always available for students within a distance education program. The present study included students from the Spanish National Distance Education University (UNED) that were to take part in a Basic Psychology examination session. They participated in web-sessions on a tip-of-the-tongue (TOT) laboratory procedure. The aim was to study whether their performance at TOT-related items would be differentially improved. Our results support the conclusion that practicing with the TOT application was effective in improving the TOT comprehension among students. Study A showed that the performance level was higher for the TOT-practiced participants relative to the non-practiced ones. Study B showed significant group by item-type interaction. Also, there was a significant effect of group, and item-type. The results are contextualized in the psychological institutions’ mainstream effort for Psychology to be viewed as a STEM discipline by students, the political representatives, and the society.

Keywords: Distance education; e-learning; scientific psychology; folk psychology; tip-of-the-tongue; STEM

Introduction
Direct experience of psychology students with the research procedure of psychological phenomena is usually considered a very profitable strategy for Psychology undergraduates. Typically, the course strategy includes presenting students with psychological phenomena and supporting the presentation with how researchers undertake its study under scientifically controlled conditions (e.g., Homa et al., 2013). A similar schema seems to be very often at work in the introductory psychology textbooks (Benjamin, 2005; Griggs & Bates, 2014). However, as Norcross et al. (2016) have pointed out, only a 3% of undergraduate Psychology programs offered a lab for their introductory course. Yet, according to Goal 2 of the APA Guidelines for the Undergraduate Psychology Major version 2.0, even “students completing foundation-level courses should learn basic skills and concepts in interpreting behavior, studying research, and applying research design principles to drawing conclusions about psychological phenomena” (APA, 2013, p. 20). Furthermore, very few works have studied learning after running experiments by measuring exam performance (Gil-Gómez de Liaño, León & Pascual-Ezama, 2012).

With that goal in mind, for ordinary psychology courses, the benefits of engaging students in a teacher-monitored immersion within a psychological research procedure are well-known (e.g., Gurung et al., 2016; Pearson & Richardson, 2013). However, for distance education institutions, most of the learning tasks are usually self-guided; and, very often, no specific tutoring is available at the exact moment when the student starts studying a certain psychological topic. For instance, in our institution, the course materials are available through the Internet (as hypertext or pdf documents), and students can use them without any constraining external timing and without interactive personal tutoring; yet, personal tutoring is supposed to be given on demand (Luzón & Quintana, 2010). Therefore, the
question arises as to whether the open availability through the Internet of a psychological research procedure improves the understanding of its targeted psychological phenomenon.

Following a suggestion by Moore (1989; see also the Community of Inquiry framework described by Garrison & Akyol, 2009), Bernard et al. (2009) conducted a meta-analysis of the instructional power for students in a distance education context of three types of factors: interactions with the course material (e.g., Hartnett, 2013), interactions with other students (e.g., Thoms & Eryilmaz, 2014), and interactions with their teachers (e.g., Coll, Rochera & de Gispert, 2014). Unsurprisingly, they found that, overall, the most beneficial interaction was that with the course material. Consequently, a very appropriate way to improve psychological learning seems to be the intensification of the contacts between the student and the to-be-learned psychological subject. Yet, the relevance of multi-media as tools for achieving a reliable understanding of concepts and phenomena has been emphasized (e.g., Mayer, 2001). In fact, this view seems to be particularly suited for engineering, experimental sciences, and mathematics, because, with the help of videos and software applications, seemingly intricate concepts and principles can become perfectly understandable (e.g., Zhang, 2014).

Although students are presented with Psychology as an experimental science (Breckler, 2014a), there is something peculiar to the everyday psychological processes that hampers their scientific understanding by undergraduates in an introductory psychology course. Certainly, the misconceptions and ordinary first-person experience with the phenomenon very often gives rise to the fact that a considerable effort is required to change the view to a more educated, science-bound, third-person analysis (for a review, see Hughes, Lyddy & Lambe, 2013). To overcome these difficulties, associated as they are to everyday psychological processes, a closer acquaintance with their research procedures appears as important as it seems to be for any other natural phenomenon. Let us take as an example the so-called tip-of-the tongue (TOT) phenomenon. For a layperson, this is just a matter of not remembering something at the precise moment we need it, while, at the same time, being completely sure we know/remember it very well. But, for psychologists, the TOT phenomenon has been, for decades, a window to the very complex mechanisms of language and memory (see, e.g., Koriat & Lieblich, 1974; for a review, see Dunlosky & Metcalfe, 2009; Ruiz, 2003, 2004). However, its replication in the laboratory, under controlled conditions, has been anything but an easy task. Overall, these peculiarities make the TOT research procedure a very appropriate tool to illustrate, at an Introductory Psychology level, the main features of scientific psychological inquiries.

Going back to our general question, we could re-frame it as whether the availability through the Internet of the TOT research procedure could improve the understanding of its methodological and theoretical intricacies by those enrolled in an online introductory psychology course. To answer this question, related with the interdependence between instructional contexts and levels of performance that could influence student achievement (De la Fuente, Martínez, Peralta & García, 2010), we ran two studies on the usefulness of online psychological procedures delivered as practices in an ongoing Psychology course.

In the studies described below, some of the students that were to take part in a Basic Psychology examination session voluntarily applied to participate in web-sessions on a typical TOT procedure. The TOT phenomenon and the way it was studied by experimental psychologists were course topics. Yet, the practice itself was defined from the beginning of the term as an assignment. As a consequence, 6 out of the 30 items in the exam were about the TOT practice. We wanted to know whether the participation in the internet practice sessions would improve the examinees' performance at the TOT-related items above that of the non-participants, compared to their
achievements in the non-related items. An improvement in the average results on the target test-items would mean that the internet facility used was appropriate as a tool for the understanding of the TOT phenomenon and for learning how psychologists perform their laboratory research on it.

As there were two examination sessions and the students could freely choose just one of them, we describe the data as study A and study B. Every multiple choice, 30-item test was completely independent from each other and both were prepared by the teachers well in advance of the sessions. The assignment of either test to a session was random.

**Study A**

**Method**

**Participants**

The data for this study were obtained from the 64 students who took part in the first examination session of a four-month Basic Psychology course. The course was mandatory in the Social Work Degree at the Universidad Nacional de Educación a Distancia (UNED). The task was a voluntary assignment for the course. The participants were 46 women and 21 men, aged between 21 and 53 years (Mean=34, SD=9.1). As described below, 34 of these students voluntarily applied for the participation in at least one web session of the available TOT procedure.

**Materials**

The course lessons and reading assignments were available to the students as pdf documents. They were accessible on the Internet through aLF, an e-learning platform designed by the UNED’s staff for their undergraduate students (e.g. Luzon & Quintana, 2010). Within these materials, a chapter about the psychology of memory (Ruiz, 2011) included a description of the TOT phenomenon, along with some topics on its relevance for human memory understanding. The difficulties for the production of the TOT phenomenon under controlled conditions were emphasized.

Additionally, all throughout the course-term, two practice Internet pages were accessible in aLF, each one with a short presentation of an Internet application for practicing with both an attentional procedure and the TOT. Each of them included a link to a pdf document with more detailed specific instructions (i.e., user’s guide) about how to work with the procedure (Contreras, 2010; Ruiz, 2010). The TOT aLF page also included a link to a Java applet that controlled a version of the TOT laboratory procedure by Koriat and Lieblich (1974). The Spanish stimulus material for the application was taken from González (1996). The applet was a menu-driven application with a task menu to freely select: (a) a few individual practice trials, (b) the whole individual experimental session, (c) a few collective practice trials, and (d) the whole collective experimental session. In addition to the task menu, there was a help menu that offered extensive and detailed on-line help for the user as conductor of the experiment, and a page for downloading the instructions given to TOT-participants, both for the individual and the collective versions of the TOT procedure; there was also a response sheet for the collective version of the TOT procedure available to download. See Figure 1 for a screenshot of a trial of the TOT procedure.

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1A JavaScript version of the TOT application is now available from the Internet at [http://www.prolepsis.es/TeleTest/EPL](http://www.prolepsis.es/TeleTest/EPL). Also, the accompanying user’s guides and other related documentation are available upon request from the first author.
For the qualification exam on the *Basic Psychological Processes* program, the usual 30-item test was presented. The questions were three-alternative items, one of them correct; and there was no penalty for omissions, although a false choice yielded a penalty of half a point/score, which was deducted from total number of hits. Students were well acquainted with this kind of qualification exams, as they are very common at our university. According to the university schedules, the items were prepared about two months before the exam session. Six out of the 30 items were target or experimental items, because they dealt with the TOT practice. The other 24 items were common questions about the remaining course material. Due to a composition error in one of the target items, it was excluded from the analyses.

**Procedure**

From the beginning of the course, students were encouraged by the teachers to carefully study the course-materials, to participate in the aLF forums discussions, and to engage as carefully as possible in the practice applications. Yet, they knew from the general information about the course that up to 25% of the items in the exam could be about the practice materials. The practice applications were available at any time through the aLF platform. Whenever a student tried to freely start the TOT procedure, s/he was required to enter her/his identity card number and last name to run the TOT application. The applet controlled stimuli presentation and response recording, and sent every student’s response to a *php* script, in order for the script to appropriately record the events in a database, along with its time of occurrence and participant’s data.

The exam session lasted for 120 minutes and took place within the ordinary university settings and facilities scheduled for the degree qualification exams. The exam was a paper-and-pencil three-choice test. During the exam, students were allowed to use whatever printed material they wanted; although sharing them or the use of digital media were forbidden by the exam supervisors.

The R software was used for the filtering, tabulation and statistical analyses all through the paper (R Core Team, 2013).
Results

Data corresponding to any practice session performed after 24:00 of the night before the exam were filtered out of the database. Participants that took the degree exam were classified in two groups as a between-subjects factor: those that entered the practice session at least once before this virtual deadline, and those who did not. Also, the type of item was a within-subject variable in the design: target TOT-related items and non-target TOT-unrelated items.

In order to analyze the effect of practicing with the application on the TOT-procedure understanding, we first ran an ANOVA on the hit rates in both kinds of items for the two groups of participants. Table 1 shows the mean hit rates for the two types of items and for both the practiced and the unpracticed group. It can be observed that performance level was higher for the TOT-practiced participants relative to the non-practiced ones, $F(1,62) = 26.45$, $MSE=2.34$, $p<0.05$, $\eta^2 = 0.16$. Also, it can be seen that students performed better at the non-TOT contents of the course, since the mean hit rates for the non-target items was higher than for the target items, $F(1,62) = 115.12$, $MSE=0.54$, $p<0.05$, $\eta^2 = 0.50$. The target-items performance level decreased up to about 1/5th (.11/.56) of the non-target ones for the unpracticed group, while this relation was only 1/2 (.35/.67) for the practiced group. Yet, this interaction, although expected from our hypothesis, just approached significance, $F(1,62) = 2.98$, $MSE=20.75$, $p<0.10$, $\eta^2 = 0.03$.

Table 1: Study A: Mean hit rates in target and non-target items of the exam for the practiced and unpracticed participants.

<table>
<thead>
<tr>
<th></th>
<th>Non-target items</th>
<th>Target items</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practiced Group</td>
<td>.67 (.03)</td>
<td>.35 (.04)</td>
<td>.32</td>
</tr>
<tr>
<td>Unpracticed group</td>
<td>.56 (.03)</td>
<td>.11 (.04)</td>
<td>.45</td>
</tr>
<tr>
<td>Difference</td>
<td>.11</td>
<td>.24</td>
<td></td>
</tr>
</tbody>
</table>

The corresponding mean standard errors can be seen within parentheses.

Hit rates as ratios of number of hits per number of items have the advantage of giving us a close enough view of the participants’ performance levels. However, one problem with this measure is that it does not control for guessing. To avoid these spurious effects, we assigned a cost to every error. As it is usually done for 3-choice tests, we computed for each participant and each kind of items, a corrected performance estimate with a penalty of half a hit per commission error. Also, since the number of items varies across item conditions, the cost and benefits per item were adjusted so that the estimates of both target and non-target items were on the same scale. Table 2 shows the mean net values for the four experimental conditions of our design on a scale of 10 points. As can be seen, there were clear effects of both the group factor ($F(1,62) = 23.59$, $MSE=2.63$, $p<0.05$, $\eta^2 = 0.14$) and the item factor ($F(1,62) = 77.66$, $MSE=0.80$, $p<0.05$, $\eta^2 = 0.40$). Certainly, participants were much better at the TOT-unrelated items than at the target ones. And practiced participants achieved overall higher records on the qualification exam. But, once again contrary to our expectations, the groups were similarly less efficient as for the target items, as shown by a decrease of 3.6 and 3.7 points for the practiced and unpracticed groups, respectively ($F<1$, for the interaction between the practice and item-type factors).
Study B

Following our university official examination schedule, two weeks after the exam session of the study A, a new exam session took place. Only students that had not applied for the first session could apply for the second one. As is usually the case at our university, most of the students in the course assisted to this second session, once they knew the general features of the exam from the first session. Throughout this time, the opportunity to work with the TOT Java application was open. As a consequence, students applying for the second exam session had more time to interact with the TOT procedure than their fellows of the first session. Additionally, our university facilities, once an exam has been celebrated, provide the exam content on the Internet for download, in order for the students to get familiar with it. So, our second-exam applicants knew about the relevance of the TOT-practice in the first exam, although they had no way to guess if it would the same for the second session.

In this study, the same type of analyzes as those described for the Study A were performed. Due to the few reasons mentioned above, the data are not strictly comparable, so that an analysis on the whole set of pooled data seems inappropriate. This study followed the same procedure as Study A, with the exception of the participants that took part in it, which were different.

Method

Participants

The data for this study were taken from the 234 students who took part at the second examination session of the Basic Psychology course. They were 189 women and 45 men, aged between 18 and 61 years (Mean= 33, SD=9.3). Of these students, 119 voluntarily applied for the participation in at least one web session of the available TOT procedure.

Materials

An independent set of 30 new, 3-alternative items were the content of the qualification test for the second session. As described before, the assignment of this exam to the second session was randomly performed two months before the first exam session. No item was discarded from this exam, as no composition error was detected. Consequently, in this study, the test includes 24 non-target items and 6 target-items.

All other features of the used materials and procedure are the same as those described for Study A.
Results

The same analyses as in Study A were run on the data of the second-session exam. Table 3 shows the mean hit rates for the two types of items and for both the practiced and the unpracticed groups of Study B. Clearly, hit rates seemed to be overall close to 50 percent, with the exception of participants unpracticed on TOT-related items, whose performance noticeably decreased. This pattern was confirmed by a significant group by item-type interaction, $F(1, 232) = 71.62, MSE=3.24, p<0.05, \eta^2= 0.13$. Also, there was a significant effect of group $F(1, 232) = 107.70, MSE=2.15, p<0.05, \eta^2=0.19$, and item-type $F(1, 232) = 70.63, MSE=3.28, p<0.05, \eta^2=0.13$, although the relevance of these effects is clearly limited by the pattern of the significant interaction.

Table 3: Study B: Mean hit rates in target and non-target items of the exam for the practiced and unpracticed participants

<table>
<thead>
<tr>
<th></th>
<th>Non-target items</th>
<th>Target items</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practiced Group</td>
<td>.49 (.01)</td>
<td>.50 (.03)</td>
<td>-.01</td>
</tr>
<tr>
<td>Unpracticed group</td>
<td>.46 (.01)</td>
<td>.16 (.02)</td>
<td>.30</td>
</tr>
</tbody>
</table>

The corresponding mean standard errors can be seen within parentheses.

A fairly parallel pattern of results can be seen in Table 4. The interaction was also significant for the net value means $F(1, 232) = 37.72, MSE=6.15, p<0.05, \eta^2=0.07$, as well as the main effects ($F(1, 232) = 84.37, MSE=2.75, p<0.05, \eta^2=0.17$, for the group, and $F(1, 232) = 32.58, MSE=7.12, p<0.05, \eta^2=0.06$, for the item-type factor).

Table 4: Study B: Mean net values in target and non-target items of the exam for the practiced and unpracticed participants.

<table>
<thead>
<tr>
<th></th>
<th>Non-target items</th>
<th>Target items</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practiced Group</td>
<td>3.83 (.17)</td>
<td>3.91 (.28)</td>
<td>-.08</td>
</tr>
<tr>
<td>Unpracticed group</td>
<td>2.99 (.20)</td>
<td>.70 (.15)</td>
<td>2.29</td>
</tr>
</tbody>
</table>

The corresponding mean standard errors can be seen within parentheses.

Overall, the data of this Study B support the idea that items regarding the TOT procedure were relatively more difficult for our students. Nevertheless, not surprisingly, those engaged in the TOT-practice were able to normalize their performance on these items up to their achievement at the control items.
Discussion

Before drawing conclusions from our research, it should be acknowledged that our experimental procedure does not perfectly fit the purest definition of an experimental design, mainly due to our participants not having been randomly assigned to the experimental conditions (Campbell & Stanley, 1966). Yet, the contrast between target and non-target items for both practiced and unpracticed participants seems to give us reasons to confidently draw some conclusions: the within-session patterns of both, session A and B taken together, amount to the effectiveness of practicing with the TOT application through the internet. Notice that our conclusion gains generalizability from the fact that the studies were run along the ordinary course-term development in our distance education university.

From the American Psychological Association, Steven Beckler (2014a, 2014b) has emphasized that most of the contents typically dealt with in an undergraduate Psychology course are included in the category code 42.2799 within the Classification of Instructional Programs (CIP) system used by the U.S.A. Nation Center for Education Statistics (NCES). The interesting issue here is that this CIP code is usually included by some leading institutions in the STEM (Science, Technology, Engineering, and Mathematics) group. Indeed, as it is the case for most of the STEM disciplines, Psychology courses for distance education have to cope with the specific difficulties produced by the lack of a direct access to lab facilities by the students. Our research was aimed at showing how some of the shortcomings for Psychology as a STEM discipline in a distance education institution could be overcome. Thus, our data add to those showing that for Psychology to be considered as a STEM discipline, the use of computers as lab analogues can be very profitable to spread among students “the critical idea that human thought and behavior can be studied scientifically” (Breckler, 2014b, p. 48; see also Gurung et al., 2016).

The present research shows that it is possible to modernize the traditional models of psychology teaching, applying information technology (IT) in the psychological science learning and instruction. Specifically, our data supports that a digitized version of the laboratory procedure developed to study a seemingly ordinary psychological phenomenon could be a powerful tool for psychology undergraduates. Indeed, this research is in line with those studies showing how the scientific education can be improved by the use of IT tools aimed to foster specific scientific cognitive skills, such as analysis and evaluation of phenomena in nature (Kirschner & Huisman, 1998). Research on the use of ITs in the learning and instruction of, for example, biology (e.g., Sewell, Stevens & Lewis, 1995), physics (Quellmalz, Timms, Silbergitt & Buckley, 2012), medicine (e.g., Bonnetain, Boucheix, Hamet & Freysz, 2010), can be found in the literature.

However, to our knowledge, there is no research dealing with the advantages of the IT use for the learning and instruction of procedures in experimental psychology. Also, it should be stressed here that our knowledge domain, being ordinary psychological phenomena and experiences, deserves a special consideration, as it usually offers a certain difficulty to be viewed from a scientific stance by the non-initiated student. Our main conclusion would be that, with the use of digitized analogues of well-known psychological research procedures, such difficulty could be overcome.

The efficiency of IT products as learning tools for psychology seems to be specially suited for distance education systems (although for some cautions see Clay, 2014). Our work clearly shows that these technologies should be massively implemented as a supplement to text material for improving the contact between psychology students and their course contents (Bernard et al., 2009). Thus, the psychological phenomena comprehension from a scientific view point could achieve the conceptual richness and complexity that could only be attained with active and interactive study (i.e. Sitzmann, 2011). Additionally, the instructor and evaluator could gain a much sophisticated assessment tool to evaluate the knowledge of psychological concepts and the competence on psychological procedures.
Learning the psychology of the tip-of-the-tongue phenomenon through on-line practice

(Pellegrino, Chudowsky & Glaser, 2001). Certainly, the way that students interact with the digitized materials could be traced in order for the instructor to assess the learning progress or the especially difficult steps.

Finally, it should also be noted that the implementation of digitized laboratory analogues of scientific psychological procedures could make the consideration of psychology as a scientific discipline a widespread view among non-psychologists as well. As it has been acknowledged by the American Psychological Association ‘APA is working to resolve one of psychology’s great public relations problems: the fact that other scientists, lawmakers and the general public don’t always view psychology as one of the STEM —science, technology, engineering and math— disciplines” (Price, 2010, p. 32). We think that in order to deal with this problem, psychologists and psychological institutions could do a great job entering IT versions of laboratory psychological procedures within the growing Massive Open Online Courses (MOOCs) as well as in other distance education programs.

Conclusions

The present research shows it is profitable to apply information technology (IT) in the psychological science learning and instruction implemented by a distance education institution. Specifically, our data supports that a digitized version of the laboratory procedure developed to study a seemingly ordinary psychological phenomenon could be a powerful instrument for psychology undergraduates. This strategy could help to cope with the specific difficulty associated to ordinary behavioral experience (explained by folk psychology as something being on the tip of the tongue) to be viewed from a more-educated scientific stance (scientific psychology). With the use of digitized analogues of psychological research procedures, such difficulty could be overcome in the context of distance education institutions or MOOC courses.

Conflict of Interest

The authors declare that they have no conflict of interest.

References


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The effects of participants’ engagement with videos and forums in a MOOC for teachers’ professional development

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Abstract
Massive Open Online Courses (MOOCs) for teachers have emerged as a new wave of MOOCs that provide free professional development for teachers around the globe. These MOOCs for teachers often rely primarily on discussion forums and videos to drive participant engagement. Using logistic regression models this paper presents the degree to which participants’ engagement with videos and forum posts can predict completion in a MOOC designed for statistics teachers’ professional development. It also explores the extent to which participants’ professional background can be considered as a modifier of their achievement in this MOOC. Findings indicated that the number of videos watched by participants is not significant in predicting MOOC completion. However, their participation in forums and their professional background shed light on understanding participants’ engagement. The study makes recommendations for MOOC designers and facilitators regarding the importance of balanced activities to foster participants’ engagement and completion in MOOCs.

Keywords: MOOCs for teachers; MOOCs; Effective Teachers Professional Development; MOOC Completion; Continuing Professional Development; Moodle

Introduction
Massive Open Online Courses (MOOCs) are tuition-free, open-enrollment learning environments that have transformed online education (North, Ronny & Max, 2014). Through MOOCs, participants have the opportunity to interact with each other and with course materials regardless of geographic location. By design, MOOC participants engage with a combination of online reading materials, videos, quizzes, discussion forums, and assessments throughout their learning. Due to their openness, MOOC environments afford participants the autonomy to choose what, when, and with whom they will interact, allowing participants to proceed at their own pace. A drawback of these two intrinsic characteristics is that MOOCs are also known for a high occurrence of participant drop out (Rosé et al., 2014; Ho et al., 2014; Coetzee, Fox, Hearst & Hartmann, 2014; Yang, Sinha, Adamson & Rosé, 2013). This high level of dropout has drawn the attention of researchers for better understanding of to what extent participants’ engagement with the MOOC contributes to their achievement or conclusion (e.g., Onah, Sinclair & Boyatt, 2014; Sinha, Jermann, Li & Dillenbourg, 2014).

Although MOOCs have gained popularity as free courses in which anyone can participate, MOOCs for teachers have emerged as a new wave in MOOCs, providing free professional development for teachers around the globe and the opportunity for these teachers (participants) to establish a global community (network). Similar to regular MOOCs such as the ones provided by Coursera or edX platforms, MOOCs for teachers also make use of videos and discussion forums as a material base. Thus, this paper explores the effect participants’ engagement has on their course completion in a MOOC designed for statistics teachers that is offered by a large American university. Using logistic regression models the study presents the degree to which participants’ professional background, and their engagement with videos and with forums can be the basis for predicting course completion and receiving a certificate.
Review of Related Literature

Videos and discussion forums are primarily and extensively used in MOOC design. Videos serve as a main entrance, attracting students to manage learning at their own pace. Discussion forums are opportunities for participants to establish connections with other participants, to present their knowledge, and to gain from mutual sharing in a community that is being created. In this section the literature on videos, discussion forums, and MOOC completion are briefly reviewed to inform the basis of the present study.

Participant engagement with videos in MOOCs

Videos are the primary venue of content delivery in MOOCs. They are used for a variety of purposes including content development, tutorials and demonstrations, lectures, guides for assignment completion, etc. (Sinha et al., 2014). Videos also contribute to engagement in discussion forums by providing input for topics to be discussed later by participants. Videos vary in length, in position within the course, and in purpose. Morris and Lambe (2014) describe a classification for MOOC videos characterizing them as: (a) introductory videos in which course instructors explain the course and its purpose, (b) video recordings of lectures given to real students, (c) animations with audio narration in which the course content is explained, (d) documentary style video, (e) interviews or conversations among instructors and guests, and (f) video with built-in questions. When MOOCs are designed for teachers, designers may make use of a particular video style or a combination of different styles according to the purpose of learning.

Research highlights the benefits of videos in online learning, such as the ability to pause, repeat or skip, allowing flexibility in the learning process and reinforcing student autonomy in MOOCs (Triay, Sancho-Vinuesa, Minguillón & Daza, 2016; Morris & Lambe, 2014). For Glance, Forsey and Riley (2013), the use of short videos intertwined with quizzes emulates one-on-one tutoring and tends to fit into a manageable amount of time that students can dedicate to MOOCs. Knowing that video watching is an activity under participants’ control (who decide if and when they will engage with videos), research on the context of video lectures has investigated video features and video styles that relate to students’ engagement and lead to viewership activity (e.g., Guo, Kim & Rubin, 2014). Although participants’ engagement with videos is an essential element in MOOC design, Sinha et al. (2014) state that from “100% students who register [in a MOOC], 75% show up: 50% of them primarily watch video lectures and the rest 25% additionally work out homework and assignments” (p. 02). This indicates that MOOC participants heavily rely on videos as their main MOOC activity. According to these authors, participants' engagement with videos in MOOCs is based on their perception of video lectures as being difficult or simple to understand, their expertise level on the subject matter, and their motivation to learn or pursue specific outcomes.

Participant engagement with forums in MOOCs

Another important component of MOOCs are discussion forums. Forums can be a space for participants to interact with others, get to know their peers, and learn through their experiences (Young, 2012). They can also be a space for participants to check their understanding of the subject matter and to ask questions regarding a task or an assignment (Young, 2012; Darabi, Arrastia, Nelson, Cornille & Liang, 2011). Forums replace the face-to-face tutorial mode of teaching, allowing a voice for any of the MOOC’s participants (Walker, 2007). Forums are an environment for cooperation among participants (Coetzee et al., 2014) in which they form relationships (Graham & Misanchuk, 2005) and learn from their interactions with others and from their interactions with course materials (Thomas, 2002).

Research presents inconclusive results regarding the effectiveness/benefits of discussion forums in online environments. Some researchers found that discussion forums prompt collaborative thinking
by encouraging participants to reflect on peers’ contributions (posts), and engage in a higher order of thinking as they articulate their own understanding of the theme being discussed and/or associating it with previous contributions from peers (previous posts) (Walker, 2007; Bates, 1995). Due to their written characteristic, forums are spaces in which the lack of non-verbal clues allows for a democratic communication among participants (Ruberg et al., 1996). This implies opportunities for introverted participants to actively engage in discussions alongside their extroverted counterparts. Forums provide spaces in which everyone’s perspective can be stated with equal value (Shank & Cunningham, 1996). In addition to giving a voice to participants, the implementation of discussion forums provides opportunities for participants to initiate discussions and to drive their own learning (Darabi et al., 2011).

In contrast, critics of the use of discussion forums state that forums produce isolated participation in discussion threads and do not encourage participants to interact with each other. This perspective sees forum participants as acting individually based upon the theme that is being discussed and upon their understanding of another participant’s writing (Thomas, 2002). Since in MOOCs a significant portion of forum posts do not receive any type of reply or view, Thomas (2002) argues that it would be more appropriate to conceptualize forums as data storage areas that can be accessed by participants instead of as spaces for collaborative engagement. Although some may conceive forums as spaces for peer collaboration and democratic participants’ contribution, forums may perform as spaces for individual voices that in some cases aren’t heard by anyone reducing them to spaces for participants’ opinions instead of interactive dialogue among them (Thomas, 2002). It is also possible that participants engage in forums as a means of information acquisition rather than critical thinking (Kanuka & Anderson, 2007). For these authors, forums may support students’ increase of knowledge, but still fall short in presenting evidence of being a venue for development of students’ new knowledge.

Participant course completion in MOOCs

As free and open courses, MOOCs often attract a high volume of participants, although only a small percentage of enrolled participants effectively complete the course (Gutiérrez-Rojas, Alario-Hoyos, Pérez-Sanagustín, Leony, & Delgado-Kloos, 2014). Dropouts have been described in the MOOC literature as a drawback of this initiative that aims to make knowledge available to many people (e.g., Liyanagunawardena, Adams & Williams, 2013; Anderson, 2013; Carr, 2012). According to Ramesh, Goldwasser, Huang, Daumé III and Getoor (2013) even for those participants who stated their intention of completing the MOOC during the registration process, 75% of these individuals do not conclude the course.

The reasons for this high level of drop-out may be associated with a combination of factors such as students’ autonomy, their perceptions of openness, lack of interactivity, diversity among participants, lack of financial commitment, age, time management, and self-motivation (Rosé et al., 2014; Wen, Yang & Rosé, 2014; Ramesh et al., 2013). What it is known is that participants engage in MOOCs for several reasons such as to learn the MOOC content (Carr, 2013), to take advantage of its social aspect represented by the discussion forums (Ramesh et al., 2013), curiosity about the MOOC concept (Zheng, Rosson, Shih & Carroll, 2015), and professional development (Zheng et al., 2015).

Clow (2013) characterized the pattern of attrition in MOOCs as a ‘funnel of participation’, which includes students who are enrolling just to get familiar with a MOOC and see how it operates, students who are already familiar with MOOCs but don’t want the commitment of all work embedded in it, and a group of participants who enroll to fully take advantage of this free professional development. Instead of studying participants’ drop-out, the main purpose of the current study is to determine the effect of forum interaction and watching videos on participants’ completion in a MOOC designed for professional development of statistics teachers. Thus, this study aims to answer the following research questions: (I) What are the characteristics of participants taking a MOOC for professional development purposes?
What factors predict completion in MOOCs for professional development purposes? Is MOOC completion associated with participants’ number of posts and number of videos watched?

Connectivism as a Theoretical Lens

Connectivism highlights the potential of connections among people and content within the network (Siemens, 2004). According to Kop and Hill (2008) connectivism “frames learning in terms of learners connecting to nodes on a network, suggesting that knowledge does not reside in one location, but rather that it is a confluence of information arising out of multiple individuals seeking inquiry related to a common interest and providing feedback to one another” (p. 04). Connectivism is used in this study as theoretical lens to understand participants’ engagement (represented by their connections with peers and with materials) in the MOOC. Downes (2010) suggests four key characteristics to achieve network learning in connectivism: autonomy, diversity, openness, and connectedness/interactivity.

Autonomy means that participants have “choice of where, when, how, with whom, and even, what, to learn” (Mackness, Mak & Williams, 2010, p. 266). In this sense, autonomy brings the notion of participants self-organization having flexibility and control over their learning process and the ability to choose how much and in what way(s) they will engage in the course. It is important to note that there are boundaries to autonomy, such as levels of expertise, personal styles of learning (individualist or groups), levels of fluency in the course language, etc. (Mackness et al., 2010).

Diversity means participants from different generations, different cultures, and different backgrounds. This allows them to gain knowledge from each other as an outcome of these varied perspectives and at the same time, stretching them beyond the typical boundaries of their comfort zones.

Openness can be seen as open access to the course and course materials (Mackness et al., 2010), meaning that participants are able to “freely enter and leave the system, and there ought to be a free flow of ideas and artifacts within the system” (Downes, 2010, para. 8). Openness also means one’s freedom in choosing to work in private or in groups, contributing or not contributing to the course.

Connectedness/Interactivity refers to connective opportunities for participants and are the elements that sustain learning in a connectivism environment. Mackness et al. (2010) contend that connectivity and interactivity can be afforded by choosing certain kinds of technology.

Context of the Study, Data and Research Questions

The context of this study is a MOOC for Educators (MOOC-Ed) offered by a large American university that has been specifically designed for teachers to learn about statistics teaching and the use of statistical investigations in teaching. According to Kleinman, Wolf and Frye (2013) the “MOOC-Ed explores a specific model designed to provide K–12 educators with self-directed, supported, flexible, yet structured learning opportunities” (p. 01).

This MOOC provided 12 discussion forums for participants, distributed as two discussion forums per unit (5 units) plus an introductory forum and a project forum. The MOOC made use of videos to introduce each course unit, and to show statistical simulations, students engaging with statistics, and use of statistical tools. To obtain a certificate of 20 hours of professional development, participants had to post at least once in each forum, and access and engage with materials by completing the tasks from two specific sections presented in each unit of the MOOC. These tasks comprise assessment of participants’ statistical knowledge, analysis and adaptation of statistical tasks, quizzes related to students performing statistical investigations, and self-assessment about their confidence in teaching statistics.

This study makes use of multiple sources of data collection with the intention of improving the quality of the research findings (Patton, 1990). Raw data was extracted from the Moodle Platform.
where the MOOC is hosted, de-identified (exclusion of participants’ names and use of participants ID numbers), and consolidated using the Perl programming language. The data components in this study were the total number of videos watched, the total number of discussion forum posts, and participants’ demographics all taken from the same MOOC offered in Fall of 2015.

The number of videos watched represents instances in which a participant clicked the play button of a video in this MOOC, including instances where participants clicked the play button for a particular video more than once. Although the variable of analysis is labeled as number of videos watched, there is an inherent limitation in that, since it is not possible to know with certainty if a participant is, in fact, cognitively engaged with the video being played or if this participant is sharing his/her attention with other activities besides this MOOC. By design, this study did not focus on participants engagement within videos such as pausing, fast-forward, and skipping video parts. The number of forum posts is comprised of participants posting new discussion threads and replying to each other’s posts. Demographics data is comprised of participant country, gender, education level background, job role, and professional experience. The demographics also captured participants’ weekly number of hours available to spend on this MOOC, if they received any incentives from their school or district to participate in this MOOC, and if they have engaged in other professional development related to preparing to teach statistics before. Each of these data sources provided the study with a specific type of information about the nature of participants’ interactions in this professional development. The purpose is to use multiple data sources joined together to generate evidence that will help in answering the following research questions:

I. What are the characteristics of participants taking a MOOC for professional development purposes? This question will make use of exploratory data analysis.
II. What factors predict completion in MOOCs for professional development purposes? This question will relate categorical predictors to a binary outcome.
III. Is MOOC completion associated with participants’ number of posts and number of videos watched? This question will relate categorical predictors to a binary outcome.

When analyzing participant completion in online learning, one must consider that completion is related to a unique combination of course characteristics and participant profiles. This means that other MOOCs with similar course characteristics (videos and forums) may not produce the same degree of participants’ completion as seen in the MOOC analyzed in this study.

Results

This section presents results of the analyses conducted to examine the characteristics of participants taking a MOOC for professional development purposes, the factors that predict completion, and an investigation of whether MOOC completion is associated with participants’ number of posts and number of videos watched. Afterwards, discussion and conclusion are presented. Statistical analyses were performed using the R statistical programming language and the R-Studio IDE.

What are the characteristics of participants taking a MOOC for professional development purposes?

Exploratory data analysis was used to build answers to this first research question, with participant demographics from a MOOC designed for teachers to learn about statistics teaching used as the data source. From 817 participants registered in this MOOC (n=817), 597 participants were from the United States, 68 were from New Zealand, 26 were from the U.K., 20 were from Australia, and 106 were from other countries (Table 1). Participants were distributed as 541 females and 276
Table 1: Worldwide participants distribution

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Participants</th>
<th>Country</th>
<th>Number of Participants</th>
<th>Country</th>
<th>Number of Participants</th>
<th>Country</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Arab Emirates</td>
<td>2</td>
<td>Greece</td>
<td>8</td>
<td>Malaysia</td>
<td>2</td>
<td>United Republic of Tanzania</td>
<td>2</td>
</tr>
<tr>
<td>Albania</td>
<td>1</td>
<td>Guam</td>
<td>1</td>
<td>Nigeria</td>
<td>1</td>
<td>Ukraine</td>
<td>1</td>
</tr>
<tr>
<td>Argentina</td>
<td>1</td>
<td>Hong Kong, SAR China</td>
<td>1</td>
<td>Nepal</td>
<td>2</td>
<td>United States of America</td>
<td>597</td>
</tr>
<tr>
<td>Australia</td>
<td>20</td>
<td>Honduras</td>
<td>1</td>
<td>Niue</td>
<td>1</td>
<td>British Virgin Islands</td>
<td>3</td>
</tr>
<tr>
<td>Brazil</td>
<td>2</td>
<td>Ireland</td>
<td>9</td>
<td>New Zealand</td>
<td>68</td>
<td>Vietnam</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>9</td>
<td>Israel</td>
<td>1</td>
<td>Philippines</td>
<td>4</td>
<td>South Africa</td>
<td>2</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2</td>
<td>India</td>
<td>6</td>
<td>Pakistan</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1</td>
<td>Iraq</td>
<td>1</td>
<td>Poland</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>5</td>
<td>Islamic Republic of Iran</td>
<td>2</td>
<td>Puerto Rico</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>1</td>
<td>Italy</td>
<td>4</td>
<td>Palestinian Territory</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td>1</td>
<td>Jordan</td>
<td>2</td>
<td>Portugal</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>1</td>
<td>Japan</td>
<td>1</td>
<td>Russian Federation</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>3</td>
<td>Kenya</td>
<td>4</td>
<td>El Salvador</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>2</td>
<td>Malawi</td>
<td>1</td>
<td>Togo</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>26</td>
<td>Mexico</td>
<td>1</td>
<td>Turkey</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
males within a variety of education level backgrounds: 161 participants have a Doctoral Degree, 428 participants have a Masters Degree, 170 participants have a 4-Year College Degree, 13 participants have a 2-Year College Degree, 16 participants have a Professional Degree (e.g. JD, MD), and 29 participants have a High School Degree. Participants’ gender in this MOOC seems to follow a skewed distribution in teacher gender as described by the U.S. Department of Education National Center for Education Statistics (2016).

In terms of the roles these participants have in their jobs, Table 2 shows that most participants were Classroom Teachers (K-12 and Special Education teachers) followed by College Instructors (College Professor and Math/Stat College Professor). With respect to their professional experience, most participants had between 5 and 10 years of professional experience. When asked how many hours they expected to have available to spend on this MOOC per week, 421 participants stated intent to engage 1-2 hours, 305 participants stated intent to engage 3-4 hours, 71 participants stated intent to engage 5-6 hours, and 20 participants stated intent to engage more than 6 hours. 774 participants reported not being required to take this MOOC, while 43 stated their school or organization required their engagement in this professional development. The number of hours participants expected to have available for this MOOC was a categorical variable labeled as Time. 761 participants reported they haven’t received any incentives from their school or district to participate in this MOOC, while 56 participants have received incentives from their employers to take part in this MOOC. 436 participants stated they have never engaged in other professional development related to preparing to teach statistics, while 38 participants have participated in other forms of professional development to teach statistics.

<table>
<thead>
<tr>
<th>Participants’ job role</th>
<th>Job_role Code</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Teachers (K-12 and Special Education teachers)</td>
<td>Job_role0</td>
<td>410</td>
</tr>
<tr>
<td>Teacher Developers (Curriculum Specialist, Professional Development Consultant, Teacher Education, and Instructional Coaches)</td>
<td>Job_role1</td>
<td>109</td>
</tr>
<tr>
<td>College Instructors (Math/Stat College Professor, College Professor – Other)</td>
<td>Job_role2</td>
<td>115</td>
</tr>
<tr>
<td>College Student Graduates</td>
<td>Job_role3</td>
<td>25</td>
</tr>
<tr>
<td>College Student Undergraduates (Pre-Service teacher and College Student undergraduate)</td>
<td>Job_role4</td>
<td>50</td>
</tr>
<tr>
<td>Other (Statistician, Educational Product/Service Provider, and Instructional Technology Facilitator)</td>
<td>Job_role5</td>
<td>108</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>817</td>
</tr>
</tbody>
</table>

**What factors predict completion in MOOCs for professional development purposes?**

Univariate logistic regression was used to gain knowledge about this second research question, which intends to identify important covariates (predictors) that are at least moderately associated with response. Participant demographics, total number of videos watched, and total number of forum posts were the data sources in respective analysis. Gender, Education Level, Experience, Job Role, Time, Number of Posts, Number of Videos, and Required were used as initial independent variables.
to predict participants’ probability of course completion as presented in Table 3. Results show that only Time (p = 0.02843), N_Posts_Made (p = 0.00000), and N_Videos_Watched (p = 0.00000) were statistically significant when considering participants’ probability of MOOC completion (Table 3).

**Table 3: P-values of predictors when considering participants’ probability of MOOC completion**

| Variable Names | Pr(>|z|) | Variable Names | Pr(>|z|) |
|----------------|---------|----------------|---------|
| Gender         | 0.12216 | Time           | 0.02843*|
| Education_Level| 0.31793 | N_Posts_Made   | 0.00000*|
| Experience     | 0.82369 | N_Videos_Watched| 0.00000*|
| Job_role       | 0.06284 | Required       | 0.12667 |

**Is MOOC completion associated with participants’ number of posts and number of videos watched?**

Stepwise multiple binomial logistic regression was used to build answers to the third research question. This procedure “retests, at each stage, terms added at previous stages to see if they are still significant” (Agresti, 2002, p. 214). For a purposeful selection model, the process starts with univariate analysis of each variable as presented in previous section. Any variable presenting a significant univariate test (p-value smaller than 0.05) is selected as a candidate for the multiple binomial logistic analysis. In multiple binomial logistic analysis, an interactive process is used for variable selection. Parameter estimates are removed if they are not significant (p-value greater than 0.05). The process of deleting parameter estimates, refitting, and verifying is repeated until it appears that all important variables are included in the model. Akaike Information Criterion (AIC) (Akaike, 1973) is used to compare these non-nested models and decide upon the model that contains the best predictor subset. Since AIC represents the expected information loss, we are looking for a model with the lowest AIC, which means that the fitted values by that model are considered to be closer to the true values (Agresti, 2002). Further, interaction effects are explored by adding these respective interactions in the model and assessing the joint significance of these variables. Changes are made in the model by using a p-value cut-off point of 0.05. Again, AIC is used to compare the models and decide upon the model that contains the best predictor subset.

By fitting a multiple binomial logistic regression, previously significant estimation of independent terms in univariate binomial regressions may be reduced, and some independent variables may become insignificant. This happens since multiple binomial logistic regression asks about the relationship between the dependent variables and the independent variables, controlling for the other independent variables. At the end of the results section, Table 7 shows the models used in this procedure, as well their respective AICs.

Participant demographics, total number of videos watched, and total number of forum posts were the data sources for this analysis. Results from binomial logistic regression (Table 4), model 1, presented both N_Posts_Made (p = 2.78e-13) and Job_role2 (College Instructors, p = 0.00614) as statistically significant when considering participants’ MOOC completion (AIC = 208.34 and $G^2 = 319.35$). Surprisingly, N_Videos_Watched (p > 0.05) was not statistically significant regarding to participants’ MOOC completion.

The 1.21 odds ratio for N_Posts_Made indicates that a one point increase in N_Posts_Made is associated with MOOC completion increasing by a multiplicative factor of 1.21 (Table 5). The odds of completing a MOOC for participants who work as college instructors (Job_role2) over the odds of completing a MOOC for participants who work as classroom K-12 teachers (Job_role0) is exp(-2.821467) = 0.060 (Table 5). This means that each one point increase in job role rank is associated with MOOC completion decreasing by a multiplicative factor of 0.60.
The effects of participants’ engagement with videos and forums in a MOOC

Table 4: Binomial logistic regression presenting number of posts and job role as statistical predictors

| Coefficients | Estimate | z value | Pr(>|z|) |
|--------------|----------|---------|----------|
| (Intercept)  | -3.927728 | -12.276 | < 2e-16 *** |
| N_Videos_Watched | 0.004861 | 1.356 | 0.17513 |
| N_Posts_Made | 0.189349 | 7.304 | 2.78e-13 *** |
| Job_role1 | -0.670288 | -0.986 | 0.32426 |
| Job_role2 | -2.821467 | -2.74 | 0.00614 ** |
| Job_role3 | -0.228465 | -0.209 | 0.83426 |
| Job_role4 | -1.271097 | -1.087 | 0.27709 |
| Job_role5 | -1.710893 | -1.542 | 0.12309 |

Note: *p<0.1; **p<0.05; ***p<0.01

Observations 817
Null deviance 319.35 on 816 degrees of freedom
Residual deviance 192.34 on 809 degrees of freedom
AIC 208.34

Table 5: Odds ratio of binomial logistic regression presenting number of posts and job role as statistical predictors

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Odds Ratio</th>
<th>Confidence Interval (2.5%, 97.5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>0.01968836</td>
<td>0.009962121 0.03518547</td>
</tr>
<tr>
<td>N_Videos_Watched</td>
<td>1.00487245</td>
<td>0.997375092 1.01255731</td>
</tr>
<tr>
<td>N_Posts_Made</td>
<td>1.20846231</td>
<td>1.151473076 1.27536903</td>
</tr>
<tr>
<td>Job_role1</td>
<td>0.51156108</td>
<td>0.109288684 1.69846737</td>
</tr>
<tr>
<td>Job_role2</td>
<td>0.05951859</td>
<td>0.006349 0.3659545</td>
</tr>
<tr>
<td>Job_role3</td>
<td>0.79575411</td>
<td>0.071273072 5.07149363</td>
</tr>
<tr>
<td>Job_role4</td>
<td>0.28052383</td>
<td>0.013165365 1.81656577</td>
</tr>
<tr>
<td>Job_role5</td>
<td>0.18070432</td>
<td>0.011790529 1.07766947</td>
</tr>
</tbody>
</table>

Logistic regression including interaction terms related to MOOC completion and their moderation effect associated to the number of posts made and participants’ job roles was explored in model 2 (Table 6). For the moderation effect of MOOC completion model 2 showed the best outcome when comparing results from other models (AIC = 201.59, see Table 7). By including the interaction in the model, previously significant estimation of independent terms were reduced, and some independent variables became insignificant. Only the interaction N_Posts_Made and participants’ Job_role2 (College Instructors) presented a statistically significant result of -0.158 (odds ratio = 0.85) which indicates that MOOC completion presents a moderating effect between number of posts made (participation) and participants’ professional activities. Table 7 presents all the previous models analyzed during the stepwise binomial logistic regression procedure. Model 2 presented the lowest AIC being the best fit among the analyzed models.
Table 6: Binomial logistic regression presenting interaction term

| Coefficients                      | Estimate | z value | Pr(>|z|)       |
|-----------------------------------|----------|---------|---------------|
| (Intercept)                       | -4.2370  | -10.496 | <2e-16 ***    |
| N_Videos_Watched                 | 0.0035   | 0.929   | 0.3531        |
| N_Posts_Made                     | 0.2299   | 6.482   | 9.04e-11 ***  |
| Job_role1                         | -2.4870  | -1.143  | 0.253         |
| Job_role2                         | 0.0544   | 0.063   | 0.9495        |
| Job_role3                         | 0.8799   | 0.746   | 0.4554        |
| Job_role4                         | -32.4400 | -0.016  | 0.9875        |
| Job_role5                         | -1.8560  | -0.994  | 0.3204        |
| N_Posts_Made: Job_role1           | 0.1682   | 1.012   | 0.3116        |
| N_Posts_Made: Job_role2           | -0.1580  | -3.195  | 0.0014 **     |
| N_Posts_Made: Job_role3           | -0.1078  | -1.255  | 0.2094        |
| N_Posts_Made: Job_role4           | 1.9410   | 0.014   | 0.9887        |
| N_Posts_Made: Job_role5           | -0.0058  | -0.058  | 0.954         |

Note: *p<0.1; **p<0.05; ***p<0.01

Observations | 817 |
Null deviance | 319.35 on 816 degrees of freedom |
Residual deviance | 175.59 on 804 degrees of freedom |
AIC | 201.59 |

Table 7: AIC comparison among models

<table>
<thead>
<tr>
<th>Model</th>
<th>AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model_A1&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made</td>
<td>212.38</td>
</tr>
<tr>
<td>Model_A2&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role+ Time+Required,</td>
<td>212.27</td>
</tr>
<tr>
<td>Model_A3&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role+Required+Time+Education_Level,</td>
<td>219.22</td>
</tr>
<tr>
<td>Model_A4&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role+Time+Education_Level,</td>
<td>217.86</td>
</tr>
<tr>
<td>Model_A5&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role+Required+Time,</td>
<td>212.27</td>
</tr>
<tr>
<td>Model_A6&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role+Time,</td>
<td>211.83</td>
</tr>
<tr>
<td>Model1&lt;- MOOC_Completion~ N_Videos_Watched+ N_Posts_Made+ Job_role,</td>
<td>208.34</td>
</tr>
<tr>
<td>Model2&lt;- MOOC_Completion~ N_Videos_Watched+N_Posts_Made+Job_role+ N_Posts_Made*Job_role,</td>
<td><strong>201.59</strong></td>
</tr>
</tbody>
</table>
Discussion

Results showed that the number of videos watched by participants is not significant in predicting the probability of MOOC completion. To better understand this fact, we first make use of the intrinsic characteristics of this MOOC as well as the knowledge established by the literature of videos in MOOCs. Different from other MOOCs offered by high volume platforms such as Coursera or edX, this MOOC was designed for statistics teachers. Therefore, it primarily attracts teachers as well other professionals of education such as teacher educators, pre-service teachers, and college students. By design, this MOOC did not make use of videos to stream lectures (videos focused on content subject), nor did it use interactive videos such as quizzes during a video stream, a common practice in MOOCs. Thus, videos in this MOOC comprise: (a) introductory videos made to introduce the topic covered by each course unit, (b) cartoon videos of students doing statistical simulations, (c) videos of students learning statistics with technology, and (d) videos of the main instructor interviewing senior statistics educators. The duration of the videos ranges from 1.5 to 21 minutes, with 7.5 minutes being the average.

The particular use of video in this MOOC may help in understanding the reasons video wasn’t a significant factor when investigating participants’ MOOC completion. The literature informs that only a small amount of participants who engage with videos complete the MOOC (Sinha et al., 2014). Additionally, passive engagement such as watching video or lectures doesn’t guarantee the best scenario for learning. Diversity of learning activities such as projects, tasks, quizzes, presentations, and discussion forum participation could be used in tandem to videos to maximize opportunities for student’s learning in MOOCs (Koedinger, Kim, Jia, McLaughlin & Bier, 2015). Connectivism allows us to acknowledge participants’ autonomy and their perceptions of educational value in videos, which can help us to understand that participants’ interactivity in MOOCs is, in fact, a product of their choices in shaping their own behavior which may or may not affect their course completion.

In regard to participants’ engagement in discussion forums, results are aligned with the branch of the literature in MOOCs in which forum participation supports participants’ course completion (Breslow et al., 2013; Kizilcec, Piech & Schneider, 2013). With regard to connectivism, participants’ interactivity in forums reinforces the idea that learning is a network formation process of connecting to specialized nodes (Siemens, 2004). Forums have the potential to amalgamate participants’ interactions with others and with course content within the network created by this MOOC. Although many may intuitively believe that participants’ interactivity with forums and with videos seems to be related to achievement, this study advances the field by showing how much these engagement types have the potential to affect (or not) student achievement.

Diversity of participants’ professional background is highlighted by connectivism as an important characteristic of massive open courses such as this MOOC. This can be seen in the fact that K-12 teachers, middle school teachers, college instructors, teacher educators, and pre-service teachers are all taking part in the same professional development. Regarding the impact that job role has on MOOC completion, results exposed that participants who work as college instructors have a lower probability of completing this professional development than do K-12 teachers. This outcome seems appropriate considering that K-12 teachers may be seeking this free professional development opportunity to gain knowledge about how to teach statistics to their students and perhaps to keep their teaching certification. In contrast, a college instructor may participate in this MOOC with the simple intention of updating his or her knowledge regarding content and/or statistical tools, and therefore would not have external pressure to complete the course. Thus, the lack of completion for participants who work as college instructors may not necessarily mean failure in the MOOC.
Conclusions and Implications

This study modeled participants' MOOC completion based upon behavioral features such as number of posts and number of video watched (i.e., videos played). The resulting evidence extends the literature on videos in MOOCs by demonstrating that interaction with videos is not a significant contributor to the likelihood of a participant completing a MOOC for teachers' professional development. Results add to the debate in MOOC forums literature indicating that engagement with discussion forums is still a very important component of participant learning as they create networks and interact with others. Additionally, the results extend the literature of MOOC completion showing that participants' professional background acts as a moderator on completion, in which participants with more prosperous jobs tend to complete less of a MOOC for professional development purposes.

Given the important role of participation in forums and level of expertise, implications for practice suggest that MOOC designers can use the results of this study as a rationale to improve success and nurture of a virtual community by using a combination of activities that foster participants' interactivity and active engagement such as group work, live interactive discussions via webcasts, projects for participants to implement with their students, and forums designed to foster expert-expert and expert-novice interactions. With the limited usefulness of video in MOOC completion, this study invites us to think about alternatives to make videos more attractive to MOOC participants. Results of this study can be used as a rationale by MOOC designers to implement the use of a video information guide where participants could browse video content before fully engaging with it, and to split a long video into smaller portions so participants could decide upon engaging with each portion. By making videos more interactive and becoming familiar with the results of this study designers can develop learning materials that will increase the likelihood of participants' completion of MOOCs for teachers' professional development.

When considering implications for teachers' professional development, using MOOCs as a venue emerges as a viable method that can support teachers' self-development in an affordable and widely available way. MOOCs for professional development provide opportunity for teachers to improve their skills in the subject area, re-examine their teaching practices, and make instructional use of new approaches or tools. The scalability and reach of a MOOC focused on preparing teachers to teach statistics is a very appealing option in closing the gap in teacher preparation regarding of knowledge in statistics concepts and teaching.

Regarding implications to research, this study sheds light on the notion that teachers' interactions in this form of professional development are a product of their autonomy, meaning that they decide which videos to watch and which discussions to engage with. Thus, MOOC researchers need to be prepared to understand and explore the idea that MOOC comprises diverse ecologies of participation (Fischer, 2011) and one size fits all may not be the best approach to keep participants engaged with the course (Murugesan, Nobes & Wild, 2017). Results of this study indicate that MOOCs should create space and provide support for distinct participants' roles based on their interests and levels of expertise. Additional studies are necessary to further understand and to model the factors that drive engagement with materials and other participants, and the factors that make participants more likely to quit or refuse engagement with others.

Limitations of this study

This study models participants' MOOC completion by using two observable behavioral features: engagement with forums and the number of videos watched, and MOOC demographics. Because only the quantity of posts was used to measure engagement with discussion forums,
understanding the full extent of cognitive engagement with the MOOC requires further study that takes the content of participants’ posts into consideration. Similarly, the impact of videos was measured using the total number of videos played by each participant throughout the full MOOC period. This variable does not incorporate nested characteristics of the videos such as video length, type of video (lecture, problem solving, simulation, etc.) leaving room for future work that investigates the implications of precisely when, which kind, and in what quantity videos are watched. As mentioned in the methods section, the number of videos played might not be a true representation of participants’ video watching since a participant can watch the video and not cognitively engage with its content. This study also did not focus on participants’ engagement within videos such as pausing, fast-forwarding, and skipping video parts. Data retrieval did not track video views that were downloaded by participants to be watched offline.

The study showed that participants’ job role matters when considering MOOC completion. However, results are contingent on participants’ honesty in providing accurate background information when registering for this MOOC (source of demographics data). Results from this study might not generalize to all MOOCs, since the study context was a MOOC for teachers in which participants might be more self-motivated learners. To improve external validity, it is recommended that these analyses should be replicated on different MOOCs for teachers’ professional development.

References


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Effect of “Tell Me More” on EFL Undergraduate Students’ English Language Achievement

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Abstract

This descriptive study aimed at finding the impact of Tell Me More (TMM), an online language-learning program, on English as a foreign language (EFL) undergraduate learners’ achievement in a University in Thailand. The study also looked at whether the time of use of TMM had an effect on learners’ achievement. Data was collected from the scores of students at four proficiency levels who did the placement, progress and achievement tests in the TMM program for the 2015 academic year. The analysis of the data indicated an improvement in English language achievement for the beginner and advanced proficiency levels after the use of the TMM program. However, TMM did not have any effect on students of intermediate+ and intermediate proficiency levels. The ANOVA and pairwise comparison analysis revealed a significant difference between the proficiency levels. The analysis of the time on task was striking. It raises concerns about the use of time as the sole indicator for assessment. The findings suggest that learning goals and assessment have the capacity to influence the use of computer-assisted language learning technologies. The study therefore will guide instructors on how to design curriculums for autonomous online learning and improve ways of assessment.

Keywords: Tell Me More; Achievement; Online Self-Study; EFL Students; Proficiency levels

Introduction

The traditional rules for English language teaching and learning in the 21st century have evolved to include every unique innovation of technology that come its way. Language learners have also mastered technological skills in order to succeed in this century as effective learners. Technology has therefore been used as an ideal medium for students to increase exposure and improve their level of proficiency (Li, 2012).

Institutions on the other hand are expected to be innovative in the use of technology. Hence, they carefully select educational technologies that are flexible enough for not only distance or open learning but also to ensure that learners become independent and responsible for learning (Lecercle, 2011). The use of technology has therefore ensured the removal of barriers to learning for learners to study in their preferred time, place of their choice without a direct contact with an instructor (Stewart, 2013). Some examples of such programs include Learning Management System (LMS), English Language Learning Instruction System (ELLIS) and Tell Me More (TMM).

Some reasons, which could account for the use of open learning technologies in language learning is its ease of access for self-study, capacity to increase learners’ motivation, improve learners’ mastery of language skills and consequently make learning student centered through active engagement in the learning process (Guemide & Benachaiba, 2014). Due to these benefits, language-learning software developers such as Tell Me More (TMM) have constantly advertised to learners and institutions to purchase their products in order for them to reach their learning goals with ease. Additionally, these software developers assure users of an improvement in their overall communication skills as fast as
possible. Moreover, these software developers guarantee a better language achievement when their products are used according to specific guidelines such as having specific contact hours.

Studies have however been done on some of these computer stand-alone learning programs that claim to have a comprehensive solution to language learning to improve learners’ performance or achievement (Mohsin, 2012; Elimat & AbuSeileek, 2014). As regards Tell Me More (TMM), studies have either focused on the perceived effectiveness of these programs on users’ language ability, usefulness and ease of use. There are, however, a few researches to back the claims that these programs have the capacity to improve learners’ overall language achievement (Yunus et al., 2010; Barrios, 2013; Perez, 2014).

It is against the backdrop of TMM guaranteeing an improvement in overall language achievement when they are used in accordance with specific guidelines that this research was undertaken. This paper therefore reports descriptive and statistical findings of students’ achievement when they used the stand-alone computer assisted language-learning program (CALL), Tell Me More (TMM). This study explored the effect of TMM on the achievement learners of different levels of proficiency. It also investigated whether the proficiency groups differed from each other. Finally, the study examined whether time of use of the program brought an improvement in students’ achievement.

Review

What is Tell Me More (TMM)?

Tell Me More, an asynchronous online learning system, is one of the advanced self-learning tools that may have a comprehensive solution for language learning. The courseware contains lessons that make interaction and second language learning and acquisition possible. Tell Me More covers elements of different topics and context that enable students to practice their listening, speaking, reading and writing skills. TMM online has five different levels of proficiency from beginner to advanced, which correspond to the levels A1 to C1 of the framework Common European of Reference of Languages of the Council of Europe (figure 1).

![Figure 1: TMM and other popular tests](source: TMM manual)
Tell Me More seeks to tutor learners by exposing them to over 850 hours of learning content, 4,500 exercises and 37 types of activities in six categories: Lesson Workshop, Cultural Workshop, Vocabulary Workshop, Grammar Workshop, Oral Workshop and Written Workshop. Learners choose the level of their preference to define the learning goals and skills they want to improve either linguistic and communication skills (TMM manual).

Tell Me More adopts the role of tutor or instructor and distinctly possess the potential role of giving meaning, controlling the process of learning, giving feedback and evaluating learning. The content of the online learning platform has further been structured around authentic events such as at the airport, weather forecast, a linguistic function and listening to a dialogue on scenarios of communication. This is followed by an activity of interaction (limited by the options offered by the program) and other pronunciation, standard activities of vocabulary and grammar (crossword puzzles, dictation, association exercises sort words, etc.) (TMM manual).

TMM is embedded with functions to detect speech through pronunciation, phrasing, intonation errors and displays a graphical feedback by showing errors after it has been compared with a native model (Blake, 2011). Godwin-Jones (2010) pointed out that the fast rate at which web language programming is developing has allowed online English language application developers such as Tell Me More to incorporate dimensions such as it interactive and audiovisual elements to make current versions sophisticated and meet the demands of the modern times.

However, several studies and reviews CALL revealed complexities in some programs (Alsied & Pathan, 2013; Amaral, & Meurers, 2011). These complexities include the graphics quality, the audio, video and photographic content, its speech recognition and visualization, the user-friendliness and usability of the learning environment of CALL programs.

**Aspects of “Tell Me More”**

The program has various aspects; students could select the skill they wish to learn or develop (figure 2). The learners could choose from activities organized around listening, speaking, reading, writing or all of the available skills. Each skill has specific components, which is aimed at improving the language ability of learners.

For example, the listening and speaking parts have been structured around everyday situation or business related situations such as, at the airport, weather, culture, history etc. and a series of oral expressions. The writing and reading parts are organized around linguistic functions such as introducing yourself and samples of reading tasks.

As regards the vocabulary and grammar aspects, TMM incorporate traditional activities such as crossword puzzle, dictations, word association activities, verb conjugation and word ordering exercises etc.

The program provides various functions for students develop their pronunciation with the automatic speech recognition.

All these aspects have been organized according different levels of difficulty (proficiency levels) and topics.
Previous studies

There are a few existing empirical studies on the effectiveness of the stand-alone CALL programs in
improving users’ specific language skill or overall language achievement (Al-Qudah, 2012; Mohsin,
2012; Perez, 2014). Many researches on CALL have focused on how computer-learning programs
promote interaction and how learners interact with the program specific language ability to the
disadvantage of an evaluation of the effect of CALL programs on learners’ overall achievement
(AbuSeileek, 2012; Hurkmans & Goos, 2013). As regards Tell Me More, researchers have focused on
learners’ perceptions, attitudes and its perceived effectiveness in improving specific language skill.

For example, Barrios (2013) research at the university of Malaga, Spain on the perspectives of 75
teachers who enrolled in Tell Me More for a period of six months showed a degree of satisfaction
with the program between moderate and low in terms of interest, usefulness and effectiveness to
train in a spontaneous oral English and communicative use. The data indicated that respondents
saw a moderate breakthrough in some communication and language skills such as oral and written
comprehension, vocabulary, grammar or pronunciation. Also, some components and features of the
program, for example, the technology of speech analysis that it incorporates, although they generated
discontent and criticism among some users, accounted for other benefits. This circumstance showed
that Tell Me More as a self-instruction tool was effective to some degree and that accounted for
degree of satisfaction.

A study by Van Han and Van Rensburg (2014) on the effect of Computer Assisted Language Learning
on the listening performance of students in the Test of English for International Communication
(TOEIC) revealed a difference in scores between the treatment and the control group. The findings
also revealed that students in the treatment group used effective listening strategies during the
TOEIC test than the control group.

In another study by Yunus, Hasim, Embi and Lubis (2010), of 85 users who were University students
and four lecturers in Malaysian University on their utilization of Tell Me More, the student participants

Figure 2: A figure showing a sample of the list of skill
found it useful for learning English. This was so because it helped them improve their proficiency in English. Participants in the study valued the adequacy of the program to improve communication, grammatical and lexical skills. They were pleased with TMM’S potential to facilitate learning and the originality of the materials and activities. The lecturers also indicated that the courseware was a useful supporting tool and it affirmed their positive perception of its suitability, ease of use and usefulness.

Li (2012) investigation into 160 students practices and attitudes during autonomous online learning revealed the students’ positive attitude towards Computer Assisted Language Learning. The participants revealed the effectiveness of CALL on their English language ability. They further reported that the continuous use of CALL programs would help them overcome problems such as ineffective learning strategies and limited oral and listening ability.

Nielson (2011) study on adult learners who used Rosetta Stone and Tell Me More to improve their proficiency in Spanish, Arabic and Chinese revealed that despite the ease of accessing the software, learners lacked compliance in using the resources due to compounding technological problems and insufficient support for their autonomous learning. This resulted in participants’ gradual loss of interest in the programs.

Another study by Perez (2014) on both paramedical and medical students in a Philippine university, students revealed no significant difference in students’ responses in relation to the effectiveness of Tell Me More in enhancing their communication skills. Users however disagreed that they encountered difficulties while using the language resource.

DelliCarpini (2012) emphasized the need to incorporate CALL programs into English language teaching and learning not only to ensure the development of online learning skills but also for learners to acquire the second language. Rodinadze & Zarbazoia (2012) also stressed that the improvement of receptive and productive skills, multimedia presentation, collaborative document editing and knowledge management are some of the benefits learners derive from educational technologies.

The above studies showed that research on TMM have focused primarily on users’ interaction, satisfaction, attitudes, usefulness and perceived effectiveness. Though useful to research, they do not give insight on the effect TMM has on the overall achievement of different proficiency levels. Additionally, what is lacking in research on TMM is the impact of recommended user guidelines such as time of use has on learners’ achievement. These reasons make it necessary to conduct a descriptive and statistical study on the effect TMM has on learners’ overall achievement test. To find this out, this study aimed at the questions below:

1. What effect did the TMM program have on English as a foreign language (EFL) undergraduate learners’ achievement?
2. How different were the proficiency groups who used the program from each other?
3. What effect did time on task on the TMM program have on learners’ achievement?

The study

Tell Me More has been used as a supplementary courseware in Prince of Songkla University, a University in the south of Thailand, for some time (http://tmm.psu.ac.th/). The participants for this study were first year students who had enrolled and used TMM as part of a Fundamental English Reading and Writing course in the Academic Year 2015. The students studied different undergraduate degree programs. Before they used the program, they took a placement, progress and an achievement test incorporated in the TMM program. The placement test categorized the students into different levels of proficiency according to the number of items they answered correctly. The student could only use the program after taking the placement test. The students were expected to use the program
for specific number of contact hours based on the level of proficiency they attain in the placement test (figure 3). The beginners were supposed to use the program for 50 hours, 40 hours for the intermediate level, 30 for the intermediate+ level and 20 for the advanced level. The students took the placement test at the beginning of the term to determine their level of proficiency. The progress test assessed the progress learners have made since they started using the program at the level assigned. The achievement test gave an overall evaluation of what the learners have learned at the end of the course.

![Figure 3: A figure showing a sample of skills and proposed time of use at the intermediate level](image)

They took the progress and an achievement test in the middle and at the end of the term to measure their progress and overall achievement respectively. The three tests were at different levels of difficulty. However, the achievement test was at a higher level of difficulty, which is comparable with standard tests such as Test of English for International Communication (TOEIC). This made the tests highly reliable.

Moreover, to make this online program more successful, the University required that the students to should assessed based on their use of TMM. The students were awarded 2% upon the fulfillment of the required hours of use. The administrator of the program in each faculty
tracked the performance of students and reported them to the departments at the end of the 2015 academic year.

**Method**

**Data**

The data for the study was from first year undergraduate students who used the program in the 2015 Academic Year. The scores of 2,137 students who successfully completed the placement, progress and achievement tests in the TMM program were selected for analysis. The data were provided with consent from the administrators of the program at the Center for Learning Promotion and Development at the University.

**Tests Instruments**

The test instruments that were used to measure the improvement in learners’ proficiency were the placement, progress and achievement tests. These tests were incorporated into the full TMM learning package. The placement test was used to determine the level of proficiency of students; beginner, intermediate, intermediate+ and advanced. The progress test measured their progress over time and the achievement test aimed at measuring their accomplishment or knowledge after using the program for the required number of hours. The Tell Me More program provided students activities and games to improve the language ability. These activities were structured around dialogues, puzzles, picture associations, videos and questions, speech recognition, cultural texts etc. The placement and progress tests had 60 items each and were scored 10 points each. Both of the tests were at a similar level of difficulty. However, the achievement test was scored out of 800 points and was at a higher level of difficulty (figure 1). The TMM administrators tracked all activities of students on the program including time of usage.

**Data Analysis**

The data was subjected to descriptive statistical analysis through which the following, frequencies, percentages, means, standard deviation and Z scores were derived. Since the tests were scored differently, a Z score analysis was done to compare and standardize them at the various proficiency levels. The Z scores difference between the placement and achievement test were computer to find out whether there was any improvement. However, the Z progress test scores were not used in analysis because it was at a similar level of difficulty with Z placement test and any difference between them may be due to chance since. This analysis was carried out because the tests were scored differently. A Z score ANOVA analysis and a pairwise comparison were conducted to find the difference between the proficiency levels.

**Results**

**Proficiency Levels**

The analysis of the placement test result indicated that the intermediate proficiency level had the highest number of students 846 (39%), followed by the beginners with 676 (32%) students. The intermediate+ level also had 450 (21%) students while the least was the advanced level with 165 (8%) students.
Analysis of the effect of TMM on EFL learners’ achievement

Table 1: Means, Standard Deviations and Z scores of the tests

<table>
<thead>
<tr>
<th>Tests</th>
<th>Beginner (n=676)</th>
<th>Intermediate (n=846)</th>
<th>Intermediate+ (n=450)</th>
<th>Advanced (n=165)</th>
<th>Total (n=2137)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \bar{x} )</td>
<td>S.D.</td>
<td>( \bar{x} )</td>
<td>S.D.</td>
<td>( \bar{x} )</td>
</tr>
<tr>
<td>1. Placement Test</td>
<td>2.39</td>
<td>0.45</td>
<td>3.86</td>
<td>0.56</td>
<td>6.22</td>
</tr>
<tr>
<td></td>
<td>8.62</td>
<td>0.48</td>
<td>8.53</td>
<td>0.85</td>
<td>4.26</td>
</tr>
<tr>
<td>2. Progress Test</td>
<td>3.00</td>
<td>1.02</td>
<td>3.89</td>
<td>1.19</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>8.53</td>
<td>1.49</td>
<td>8.53</td>
<td>0.85</td>
<td>4.48</td>
</tr>
<tr>
<td>3. Achievement Test</td>
<td>285.89</td>
<td>32.94</td>
<td>306.66</td>
<td>42.59</td>
<td>419.38</td>
</tr>
<tr>
<td></td>
<td>566.42</td>
<td>77.15</td>
<td>343.85</td>
<td>97.87</td>
<td></td>
</tr>
<tr>
<td>4. ZPlacement Test</td>
<td>-0.96</td>
<td>0.23</td>
<td>-0.20</td>
<td>0.29</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>2.23</td>
<td>0.25</td>
<td>2.23</td>
<td>0.25</td>
<td>0.00</td>
</tr>
<tr>
<td>5. ZProgress Test</td>
<td>-0.72</td>
<td>0.49</td>
<td>-0.29</td>
<td>0.58</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>1.97</td>
<td>0.41</td>
<td>1.97</td>
<td>0.41</td>
<td>0.00</td>
</tr>
<tr>
<td>6. ZAchievement Test</td>
<td>-0.59</td>
<td>0.34</td>
<td>-0.38</td>
<td>0.44</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>2.27</td>
<td>0.79</td>
<td>2.27</td>
<td>0.79</td>
<td>0.00</td>
</tr>
<tr>
<td>7. Zdiff (6-4)</td>
<td>0.37</td>
<td>0.40</td>
<td>-0.18</td>
<td>0.45</td>
<td>-0.24</td>
</tr>
<tr>
<td></td>
<td>0.04</td>
<td>0.70</td>
<td>0.04</td>
<td>0.70</td>
<td>0.00</td>
</tr>
</tbody>
</table>

The comparison of the mean and Z score analysis for the Placement and Achievement tests scores in each proficiency level in table 1 were as follows. For the beginners, the mean and Z score in the placement test was \( \bar{x} = 2.39, z = -0.96 \), progress test \( \bar{x} = 3, z = -0.72 \) and achievement test \( \bar{x} = 285.89, z = -0.59 \). The Z achievement score reported for the beginners in all three tests showed an improvement in students’ achievement.

The mean and Z score for the intermediate level in all the three tests were as follows: placement test \( \bar{x} = 3.86, z = -0.20 \), progress test \( \bar{x} = 3.89, z = -0.29 \) and achievement test \( \bar{x} = 306.66, z = -0.38 \). For the intermediate+ level: the mean and Z score for the placement test \( \bar{x} = 6.22, z = 1.01 \), progress test \( \bar{x} = 6.34, z = 0.90 \) and achievement test \( \bar{x} = 419.38, z = 0.77 \). The Z achievement score reported for these levels indicated a drop in achievement.

The advanced proficiency level students had means and Z scores as follows: placement test \( \bar{x} = 8.62, z = 2.23 \), progress test \( \bar{x} = 8.53, z = 1.97 \) and achievement test \( \bar{x} = 566.42, z = 0.77 \). The Z achievement score of the advanced group showed little improvement from the level they started.

A further analysis of the differences between the means of the Z scores of the placement and achievement test scores \( \bar{Z} \) diff 6-4 revealed a Z difference as follows beginner \( z = 0.37 \), intermediate \( z = -0.18 \), intermediate+ \( -0.24 \) and advanced \( 0.04 \). This means that while the beginners got the highest improvement in the achievement test followed by the advanced groups, the intermediate and intermediate+ groups had a drop in their achievement.

Analysis of the differences between the proficiency levels

From table 2, the analysis of the differences between the proficiency groups by comparing the Z difference using a one-way between groups ANOVA indicated a statistically significant difference between the four levels of proficiency at a significant level of \( p<.01 \) \( F(3,2131) =1597.386, p=.000 \). A pairwise comparison in table 3 further showed that the groups were statistically different from each other and were of different levels of ability.
**Table 2: ANOVA Table showing the difference between groups in the achievement test**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>14092035.355</td>
<td>3</td>
<td>4697345</td>
<td>1597.386</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6266515.922</td>
<td>2131</td>
<td>2940</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20358551.277</td>
<td>2134</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01

**Table 3: Pairwise comparison of the proficiency levels**

<table>
<thead>
<tr>
<th></th>
<th>Beginner</th>
<th>Intermediate</th>
<th>Intermediate+</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner</td>
<td>-</td>
<td>0.54185*</td>
<td>0.60203*</td>
<td>0.32594*</td>
</tr>
<tr>
<td>Intermediate</td>
<td>-</td>
<td>-</td>
<td>0.06018*</td>
<td>-0.21591*</td>
</tr>
<tr>
<td>Intermediate+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.27609*</td>
</tr>
<tr>
<td>Advanced</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*p<.01

**Analysis of the time of use**

The mean score of hours of use of the program for the proficiency levels were analyzed in table 4. The result indicated that the beginners spent an average time of 74.46 hours on the program. The intermediate group recorded an average time of 70.16 hours on the program. The intermediate+ group spent an average of 49.07 hours on the program while the advanced group spent an average time of 22.39 hours on the program.

**Table 4: Average time spent on the TMM program by the proficiency groups**

<table>
<thead>
<tr>
<th></th>
<th>Beginner</th>
<th>Intermediate</th>
<th>Intermediate+</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>74.46</td>
<td>70.16</td>
<td>49.07</td>
<td>22.39</td>
</tr>
</tbody>
</table>

**Discussion**

**Effect of TMM on learners’ achievement**

A comparison between the z placement and achievement test scores in table 1 indicated an improvement in the level of English for the beginner and advanced groups. This means that the TMM program improved the achievement of students at both the beginner and advanced levels. For the beginners, this confirms the findings in Lin (2014), that the use of technology that incorporates concepts and organizes information have a positive impact on students at low proficiency level.
On the other hand, the intermediate and intermediate+ groups had little to no improvement in their achievement test. In general, the students at these levels had no progress in their achievement after using the program. The results might suggest that the TMM program is effective for students at the beginner level and to some extent effective for students at the advanced level. What could account for the no and limited achievement in the intermediate and intermediate+ groups respectively could be the mode of assessment. Assessment for the use of the program was based on time on task. The students may have focused on fulfilling the time requirement rather learning the content in the program. Melor (2007) also pointed out that computer access, time constraints, individual computer skills and hardware issues, learner socio-cultural backgrounds, previous knowledge and online learning experiences all have an effect on learning process which may affect achievement.

**Difference between and effect of TMM on the levels of proficiency**

It could be concluded from the comparison of the Z difference using ANOVA \( p<.01 \) \( F (3,2131) =1597.386, p=.000 \). In table 2 that the learners significantly differed from each other. The significant differences between the various proficiency levels further confirmed why the TMM has a different impact on learners of different levels of proficiency. The students at the intermediate, intermediate+ and advanced levels may have found the program easy to do and not challenging enough to stretch them beyond their limits. The students at the beginner level may have seen the program as an opportunity to improve their level of English and may have exerted much effort. This signifies that the TMM program is suitable for students of lower to intermediate levels in English.

**Effect of time on learners’ achievement**

The analysis of the time on task on the TMM program was striking. The findings in table 4 indicated that despite the specific time requirement for each proficiency level, the beginners spent an average time of 74.46 hours in using the program. This was more than the required 50 contact hours. This may have accounted partly for the improvement in their achievement. For students at this level, the more time they spent on the program the better they became. The intermediate and intermediate+ groups on the other hand spent an average of 70.16 hours and 40.07 hours with the TMM program respectively. For students at the intermediate level, this was over the required 40 hours of use. Unlike the beginner group, they had no improvement their achievement. Interestingly, the more hours the students at this level spent using the program, the more they dropped. The average time of use recorded for students at the advanced level was 22.39 hours. The students at this level had a limited achievement even though they used the program a little over the 20 hours required.

These findings mean that time of use is beneficial to improving learners’ English ability especially for students of lower proficiency level. It confirmed the study that time of use is beneficial to learning achievement (McDaniel, 2011). Yet, it should not be the sole criteria for assessing learning progress and achievement, because students at a higher level who find the content of a language program not challenging enough made leave the program on to count the time to fulfill the course requirement. What may also hold is that students at the higher level may finish doing the activities in the program before time. Hence, for assessment purposes, the only option left is to leave the program on to count the time. This however raised concerns about the use of only hours of use as a measure of learning progress.

**Conclusion**

The study revealed the effect of Tell Me More on EFL students’ achievement. It further showed how assessment played a role in students’ achievement.
In this context, TMM had a positive impact on learners at the beginner in terms of their achievement. It also had a minimal impact on the achievement of users at the advanced level. However, TMM had no effect on the achievement of learners at the intermediate and intermediate+ levels. What could have caused the minimal to no improvement in the advanced, intermediate and intermediate+ levels is the manner of assessment (time of use). Time of use, which was used as the method of assessment, may have influenced students to use the program in unbeneficial ways. In other words, the students may have focused on meeting the time requirements for assessment purposes rather than learning the content of the program. The findings on students spending more hours on the program but achieving less attest to this (tables 1 & 4). Hence, TMM could be more effective in terms of enhancing learners’ achievement if follow context specific guidelines.

The study concludes that although contact hours with a computer assisted language learning program is beneficial especially for beginners, it should not be the sole indicator for measuring learning progress and achievement. Other innovative means of assessment such as giving specific and measurable learning goals to different proficiency levels based on their needs will be needed to complement the time requirement.

Limitations and suggestions for further studies

Despite the findings, this study had some limitations. The data was obtained from students’ scores in an academic year, therefore, factors such as perceptions, students’ ability, learning practices, previous experience of learning with technology, motivation, personality types and previous knowledge of English that may influence students in the learning process were not considered. Data on the above could be obtained from interviews and surveys. Furthermore, due to the descriptive and a little statistical nature of the study, the result may not be generalized to other users of the TMM program. Hence, a robust statistical analysis needs to be conducted to know the correlations between the factors such as time, proficiency level, perceptions and attitudes that may affect learners’ overall achievement and even on specific language skills.

Additionally, a follow up study is needed on what learners do (practices) or how learners interact when they log on to the TMM program. Such research will not only contribute to and expand the future knowledge base of computer assisted language learning but it will also guide and improve instructional and curriculum design for autonomous learning. Moreover, such study will provide additional insight to institutions of higher education who are considering implementing the TMM program or any computer-assisted language-learning program in their instructional design.

Acknowledgment

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References


Recognizing the expatriate and transnational distance student: A preliminary demographic exploration in the Republic of Korea

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Abstract

Descriptions of distance students in the literature are robust. Yet when speaking about students outside of a national context, nuance is lost by the failure to identify the complexity in borderless higher education. The global student body is often too broadly categorized as “international” when in reality, this can be further refined to produce two additional classifications that more appropriately identify and describe a hitherto invisible phenomenon: the expatriate and transnational distance student. Utilizing respondent-driven sampling, student demographic and academic program data were collected using these two operational definitions. The resulting data suggests a potential profile for the expatriate/transnational distance student phenomenon as manifested in South Korea, along with broader demographic and program characteristics. As a nascent phenomenon and introductory inquiry, the research is limited in scope with the intention of a) establishing a taxonomy for the distance education community, b) a practical method for investigation, and c) avenues for further research such as student characteristics, motivation, attrition/retention, etc. Such insight would assist policy/guidelines for universities, their programs, and instructors.

Keywords: distance students; transnational education; international education; demographics; Korea; globalisation; research methodology

Introduction

Online distance education has grown tremendously in the 21st century (Allen & Seaman, 2013; Simonson, Smaldino, Albright & Zvacek, 2012). Yet, despite growth each year in online course enrollment (Allen, Seaman, Poulin & Strout, 2016), it “is very difficult to speak singularly about online learning, as there are numerous factors within different disciplines and course and program environments” (Lorenzo, 2015, p. 45). Moreover, distance students themselves embody a staggering number of valuable and insightful characteristics. As a result, many categorizations, attributes, or labels have been used to describe and explore this intrinsic complexity which ranges from being non-traditional, prior academic experience and attrition/retention, socioeconomic status and ethnicity, university generational status within a family, and ultimately online course success (Aragon & Johnson, 2008; Bean & Metzner, 1985; Dumais, Rizzuto, Cleary & Dowden, 2013; Hachey, Wladis & Conway, 2013; Kauffman, 2015; Kaupp, 2012; Kelly & Schorger, 2003; Liu, Gomez & Yen, 2009; Packham, Jones, Miller & Thomas, 2004; Roblyer & Davis, 2008; Stoessel, Ihme, Barbarino, Fisseler & Stürmer, 2015; Tyler-Smith, 2006; Xu & Jaggers, 2013; Yoo & Huang, 2013).

Two that stand out in absentia, however, are the expatriate and transnational distance student (Appendix A). In light of this absence, this researcher hopes to inspire discussion and further research into this otherwise undocumented distance student body that suffers from a poverty of recognition. Equally valuable are the lessons learned from an introductory study into a transparent and distributed population, and the insights gained from their demographics.
Background

Expatriation is not a new phenomenon in and of itself. Work assignments abroad in the corporate sector, government and military posts, and even missionary assignments have been studied extensively from the perspective of cultural models and adaptation (Hall, 1959 and 1976; Lewis, 2010; Pollock & Van Reken, 2009). Individuals may choose to self-initiate expatriation and even a study of expatriate workers in academia has been conducted locally in Korea by Froese (2012). However, while a wealth of information exists regarding distance students in their domestic contexts in addition to a robust amount of literature regarding expatriate workers abroad, there is a noticeable paucity of scholarly reference to the phenomenon of the expatriate and transnational distance student.

Ziguras (2008) only briefly mentioned this and assumed that “the experience of expatriate students in distance education provided from their country of origin is very similar to that of domestic students located in the institution’s home country” (p. 640), and shifted focus back to the experience of international distance students. However, this is an assumption rather than an evidence-based conclusion. Living and learning cross culturally has profound effects on the individual (Pollock & Van Reken, 2009). Moreover, there is more involved in the distance education enterprise beyond the virtual classroom from student support services at an administrative level (e.g., academic advising, registration, student support) to specialized services unique to/required by the particular host country of the expatriate/transnational student (e.g., apostilles). This gap in knowledge was the impetus for conducting an exploratory study into these two types of distance students to begin the conversation by simply recognizing who they are.

Global Distance Students

One of the challenges associated with discussing distance learners is their heterogeneity (Lorenzo, 2015). This reality also extends to any attempt at having a more meaningful discussion regarding students outside of a local, national context. Often the main area of focus are the potential difficulties that can arise as the result of differences in one’s native language or cultural heritage, and how these perspectives relate to pedagogical, curricular, and technological designs (Selinger, 2004). This, however, is true of domestic multicultural populations as cultural/linguistic profiles can shift and clash across a broad spectrum at the national, regional, and local level (Pollock & Van Reken, 2009). As noted with the concept of distance and non-traditional students, global distance students (GDS) are difficult to speak singularly about (Bean & Metzner, 1985; Lorenzo, 2015). Erichsen and Bolliger (2010) recognized “that the graduate student experience can be intensely stressful and perplexing” and “it can be particularly so for international students” (p. 312). One reason the scholars noted for this is the lack of social knowledge in comparison to their domestic peers, but there is no reason to exclude expatriate/transnational distance students from that challenge as well, especially since this type of cultural isolation or insulation has been well documented to have significant impact on the individual (Pollock & Van Reken, 2009). Feelings of isolation online and the detrimental effects it can have on student retention is also well known, though this may be even more pronounced for international students (Erichsen & Bolliger, 2011). This, of course, is equally true for the expatriate and transnational that live and learn cross-culturally, particularly in locations where the culture(s) and language(s) may be significantly different from their own, and where they may have spent extensive/intensive periods of time (Pollock & Van Reken, 2009).

A notable discrepancy in applying the generic label of international to all global distance students, however, is the lack of internal refinement in this broad categorization (the paradox of twins). On the surface, like a set of twins, the international, expatriate, and transnational distance student can appear very similar if not identical. When speaking singularly about such a population, it is difficult to
know whether such students are truly international (i.e. present only for the duration of the educational program), have immigrated (i.e. have moved to the country for reasons and a duration unrelated to an educational program), or potentially expatriates/transnationals which blurs the boundaries of local legal status, reasons for moving/living abroad, and potentially linguistic/cultural heritage (Froese, 2012; Pollock & Van Reken, 2009). Yet also like twins, it is crucial to recognize the differences and individuality of each group.

Habib, Johannesen, and Øgrim (2014) described the use of a virtual learning environment by international students in an on-site program and tried to address this same classification problem among the international students in their study. They offered the general classification of the Global South and Global North where “students from the Global South have probably experienced the so-called digital divide, a divide in terms of economy, access, knowledge and power” and “are lagging far behind the North when it comes to technological infrastructure and penetration of personal technology” (p. 197). Another study conducted by Lee (2011) at a Korean university examined the perceptions that national and “international” students have of the role of the instructor in the classroom, while Selwyn (2011a, 2011b) examined a large group of learners distributed all over the world that were attending a university located in the UK. Similarly, Gemmell, Harrison, Clegg and Reed (2013) conducted a case study of an online graduate program based out of the UK, yet only described the experience that national students had with international peers in the virtual classroom and not vice versa. The noticeable characteristic shared in all of these studies is that not only are the perspectives of the GDS participants under-represented, they are not clearly recognized.

While it is easy to apply a single label to a heterogeneous and complex group, this does not allow for more meaningful distinctions to be made, or a more sophisticated filter to be applied. In an increasingly global and/or internationalized field of higher education, it behooves us to adequately and appropriately represent the complexity of the phenomenon (Creswell, 2015). The literature, while informative in exploring numerous (and disparate) characteristics of distance learners in the 21st century, is noteworthy in this absence, and as this researcher posits, has been too quickly dismissed (see Ziguras, 2008), or inadvertently mixed together under a catch-all label of “international”.

**Key Research Objectives**

There were three main objectives that this researcher intended to accomplish with this study: a) provide a practical taxonomy for describing and discussing global distance students for the distance education community, b) suggest and demonstrate a practical methodology to collect data on a transparent and distributed population, and c) highlight some of the applications of this knowledge. In tandem, these three objectives should be able to serve as a foundation for more meaningful research and discussion. To that end, the first priority was to establish the demographic characteristics of the expatriate and transnational distance students as found in the Republic of Korea (as a consequence of where this researcher resides), as well as the characteristics of the distance programs they were involved in.

Since no prior documentation or research exists from this particular perspective, it was considered essential to identify and describe, at least in basic ways, the students themselves. As a result, descriptive and contextual data could be offered to start a discussion. Similarly, an objective was to compare how students in these two categorizations were similar with/different from distance students in studies that Selwyn (2011a, 2011b) conducted in terms of demographics. Second, collecting such data and testing the viability of the sampling method illuminated unexpected challenges. While this affected the ultimate sample size in this instance, it was valuable nonetheless to highlight how
departmental and/or university record keeping can benefit from a slight modification in recording whether or not their distance students live abroad and where. In effect, the result is a blueprint that can streamline future studies in Korea and elsewhere in the world.

Methodology

Operational Definitions

Given the notable ambiguity in speaking clearly about the GDS population, this researcher developed and proposed a taxonomy based on the student’s relationship to their host country and that of the academic institution (Appendix A). This descriptive relationship is beneficial for two reasons since a) it avoids socioeconomic, cultural, and/or ethnic bias which is easily observed (and exemplified) in the argument between the terms expatriate and immigrant (and the classifications used by Habib et al., 2014), and b) because it adequately describes the nuance central to the expatriate/transnational distance student phenomenon. Therefore the two terms below are the foundational lenses for this study.

- **Expatriate Distance Student:** A student from country A, sojourning via a non-tourist visa in country B, attending university online in country A.
- **Transnational Distance Student:** A student from country A, sojourning via a non-tourist visa in country B, attending university online in country C.

Visibility

The expatriate/transnational distance student population, though not a sensitive one, is transparent (Creswell, 2015). While census data is collected and published by the Korean Ministry of Justice (MoJ) and Immigration Department, there is no obvious way to extrapolate the number of foreign residents who could be expected to complete distance programs online while abroad. This makes random or probabilistic sampling unfeasible (Creswell, 2015; Levin & Fox; 2011). While data published by the MoJ does contextualize and categorize the amount of foreign residents in Korea by visa type and age (among other categories), and serves as an invaluable point of reference, there is no obvious way to identify the population beyond snowball sampling. For example, as of 2015 the foreign population of Korea was reported at 1,899,519 people or roughly 3.69% of the population (MoJ, 2016, p. 36). If we examine residents by nationality and visa type, a more complex portrait emerges. Respondents in this study represented four nations (Canada, the U.S., the U.K., New Zealand) however Korean immigration only reports on Canada and the U.S. due to their relatively large number of foreign residents at 25,17 and 138,660 respectively (p. 45). It should be noted that although the foreign resident numbers for the U.S. are considerably larger than many nations (though only roughly 7.5% of all foreign residents), this is skewed by the presence of the American military under Status of Forces Agreement (SOFA) visas.

When looking at visa type and subsequent issuances, that amount can be more realistically contextualised. The highest number of visa types (E-2) reported in this sample totaled at 16,144 for all eligible nationalities combined (MoJ, 2016, p. 37). In other words, there are far fewer U.S. citizens living in Korea outside of the military than the numbers would suggest prima facie. More to the point is that the number of foreign residents in Korea is at present a very small fraction of the total population, and the nationalities represented in this study represent an even smaller fraction of the foreign population. The challenge of estimating representative statistics notwithstanding, this endeavor also uncovered difficulties/limitations with identifying expatriate/transnational distance students at this researcher’s own university department’s distance program.
While students must provide addresses when applying to and enrolling in the program, many list their home-addresses of record as a matter of convenience, not their current actual residence. A search of the department's database by an academic advisor produced only a single address abroad, despite common knowledge that there were around 10 students living abroad in South Korea currently enrolled in the program. Thus in order to recruit participants from within the department as a matter of convenience, the survey was simply advertised on the department’s Moodle homepage.

The primary sampling plan was to announce a basic demographics survey and recruit participants currently in South Korea. To do so, this researcher built a website to advertise the nature and scope of study. This served multiple purposes such as acting as a simple access point for all related information, along with indicating the initial announcement and subsequent open response period (Andrews, Nonnecke & Preece, 2003; Archer, 2008; Bennett, & Nair, 2010). The survey was advertised on 13 internet/social media forums that cater to expatriates locally (in addition to word of mouth). Given the context of public social media forums, it was important to establish credibility as a researcher and research project. The website was hosted on this researcher’s university’s server, and all contact was directed to a university email address that shared the same domain name (Perkins, 2011).

The design of the website also took into account advice from the literature for universal access as it was made mobile friendly (Andrews et al., 2003), and the survey tool chosen, SurveyMonkey, specialized in conducting surveys (Waclawski, 2012). Moreover, SurveyMonkey would also provide better data security (Barchard & Williams, 2008), easier logic features, and a question bank to draw from if needed (Waclawski, 2012). Several revisions of the overview page, as well as the layout of the information were made in order to make it as clear as possible to respondents (Evans & Mathur, 2005). This researcher also had the survey items reviewed and piloted by several known acquaintances who fit the definition of expatriate distance student as a formative evaluation for wording, clarity, and to point out any discrepancies or errors (Bennett & Nair, 2010; Burford et al., 2009; Morrison, Ross, Kalman & Kemp, 2011). By observing and timing trial runs, the length of time needed to complete the survey was documented and advertised as an effort to increase participation (Andrews et al., 2003; Archer, 2008; Sinkowitz-Cochran, 2013; Trouteaud, 2004).

The survey ultimately resulted in 25 fixed items that ranged from basic demographics (e.g., gender, age range, area of residence) to characteristics of the academic program (e.g., level of study, location of the program). A 26th item was an optional, open-ended text-box that allowed respondents to add any additional or clarifying information. Equally important was recognizing the complication of respondents potentially having completed more than one program online while living abroad. For such a scenario, participants were asked to simply list the most recent/highest level of study and list additional online programs such as certificates, licenses, or other degrees in the optional text box.

The survey was advertised prior to the opening date for two weeks, and collected responses through various channels (i.e. email link, web link, embedded form) for one week following the announcement period. Throughout the collection period, additional reminder-announcements were made, and reminder/follow-up emails were sent to participants who signed up for the survey mailing list in an effort to increase the response rate (Edwards et al., 2009).

Results

The initial response count was 38 over the seven-day collection period with 5 incomplete responses. The completed total response rate was n=33. The most effective channels through Survey Monkey proved to be the direct email link (19 responses) for the mailing list, with the direct web link (17 responses) that was advertised on various public and private social media forums coming in second. The embedded survey form on the research project website was the least effective (2 responses).
Response activity was also clustered around the opening of the collection period, though throughout the week there was a low but consistent response rate until day 6. This researcher offers the following profile extrapolated from the data. A far more detailed presentation of the demographics is presented in tables B and C in the appendices B and C.

- The expatriate/transnational distance student in South Korea is:
  - Disproportionately male (87.8%)
  - Most likely single/not-married (57.6%)
  - Around 35 years old at the start/during the program (45.5%)
  - Begins the program on average around 5 years of expatriation (60.6%)
  - Lives in the capital-metropolitan area (81.9%)
  - Studies almost exclusively at the master’s degree level (84.9%)
  - Most likely to be studying online in their home-country (69.7%)
  - Has no prior online course experience (78.8%)
  - Has a program GPA of around/above 3.6 (69.7%)
  - The program and field of employment/study are congruous (84.8%)

**Discussion**

As an exploratory study, the primary goal was to collect and offer data that was descriptive and indicative rather than anything generalizable to other populations, or anything predictive as was noted in a study with similar scope and purpose conducted by Hughes in 2013. This would allow comparison to other literature regarding characteristics of distance students, and more importantly provide a starting point with insight and context for discussion and further exploration.

The general profile of the expatriate/transnational distance students fits the three characteristics of the non-traditional student proposed by Bean and Metzner in 1985, but more relevantly is very similar to the students in studies that Selwyn (2011a/b) conducted, particularly in terms of age, prior educational attainment, and GPA. Although the data has stated limitations from sampling methodology and sample size, the most salient characteristic that stood out was the gender distribution similar to MOOCs. Broadly speaking higher education statistics tend to have women students/degree earners as a slight majority (Hoyt & Simon, 2016). Although the most recent data published by the Ministry of Justice detailing Korean immigration statistics does not report the gender distribution of visa types, they do provide entry numbers by gender with a majority being women at 55.6%, and by gender and age with there being nearly double the amount of women entering Korea between the ages of 20-29 at 1,060 versus 1,908 respectively, and a slightly higher amount of women between the ages of 30-39 at 1,243 to 1,452 respectively (MoJ, 2016, p. 24).

Although these numbers vary from year to year and age bracket to age bracket, there is a large disparity between that of foreign male and female entries. The results for expatriate/transnational students cannot be generalized without the caveat of them potentially being grossly inaccurate, but the gender ratio is definitely not reflected by Korean Immigration statistics (MoJ, 2016), or general higher education statistics (Hoyt & Simon, 2016). It is possible that they are mostly male for reasons that are unclear; but this requires more data. Moreover, if universities and/or departments tracked these characteristics, there would be an additional point of reference to compare against local immigration statistics, especially if relying on a sample selected from a single university/department.

This researcher has provided a two-way chi-square test to examine the likelihood of a relationship between categorical data; and in this particular case, gender, in table 1. This is appropriate since it does not assume “a normal distribution in the population nor interval-level data” (Levin & Fox, 2011, p. 235). A basic cross-tab and chi-square analysis suggests that the following potential relationships
Recognizing the expatriate and transnational distance student

are statistically insignificant. This researcher offers the reminder that the focus of this paper, however, is on offering the conceptual taxonomy, a practical research method, and highlighting future research avenues and issues more so than an emphasis of the results given the small sample size.

The second preliminary data point that stood out was student age. Nearly 55% of respondents reported being older than 35 within the ranges of 35-44 and 45-54 being the most prominent. Bean and Metzner’s (1985) criteria for the non-traditional student all apply (i.e. classified as a part time student, not living on campus, and being older than 24) but arguably to a degree far beyond what was originally imagined, even in the case of graduate students. Living in a different country with a different language and culture for years is arguably quite different from not living on campus. Nonetheless, additional chi-square tests in table 2 suggest some statistical relationships but also reveal the challenge of having low cell counts in several categories. Levin and Fox (2011) noted that the counts per cell should not be too small, although exactly what this threshold should be depends on a number of factors. Notable again was the gender distribution. According to the Ministry of Justice (2016), as of 2015 there were more women entering the nation than men for comparable age categories.

### Table 1: Gender and distance student classification cross-tab and chi-square

<table>
<thead>
<tr>
<th></th>
<th>Expatriate</th>
<th>Transnational</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20 (87%)</td>
<td>9 (90%)</td>
<td>29 (87.8%)</td>
</tr>
<tr>
<td>Male</td>
<td>20 (20.21) [0]</td>
<td>9 (8.79) [0.01]</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3 (13%)</td>
<td>1 (10%)</td>
<td>4 (12.2%)</td>
</tr>
<tr>
<td>Female</td>
<td>3 (2.79) [0.02]</td>
<td>1 (1.21) [0.04]</td>
<td></td>
</tr>
<tr>
<td>Sub-total</td>
<td>23</td>
<td>10</td>
<td>33</td>
</tr>
</tbody>
</table>

The chi-square statistic is 0.0606. The p-value is .805539.

### Table 2: Gender and age at time of program cross-tab and chi-square

<table>
<thead>
<tr>
<th></th>
<th>15-24 years old</th>
<th>25-34 years old</th>
<th>35-44 years old</th>
<th>45-54 years old</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0 (0%)</td>
<td>11 (96.5%)</td>
<td>12 (80%)</td>
<td>3 (100%)</td>
<td>26 (78.8%)</td>
</tr>
<tr>
<td>Male</td>
<td>0.79 (0.79)</td>
<td>11.03 (0.00)</td>
<td>11.82 (0.00)</td>
<td>2.36 (0.17)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1 (100%)</td>
<td>3 (3.5%)</td>
<td>3 (20%)</td>
<td>0 (0%)</td>
<td>7 (21.2%)</td>
</tr>
<tr>
<td>Female</td>
<td>0.21 (2.93)</td>
<td>2.97 (0.00)</td>
<td>3.18 (0.01)</td>
<td>0.64 (0.64)</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>1</td>
<td>14</td>
<td>15</td>
<td>3</td>
<td>33</td>
</tr>
</tbody>
</table>

χ² = 4.536, df = 3, χ²/df = 1.51, P(χ² > 4.536) = 0.2091

Expected values are displayed in *italics*

Individual χ² values are displayed in (parentheses)
Moreover related to age was the length-of-time abroad when students decided to enroll in online programs. It is not widely known what the average length of expatriation is in South Korea but this researcher suggests/speculates from personal experience (having lived nearly a decade in-country) that two to three years is probably the most common. Respondents that have lived in country for a decade or more are quite interesting from this researcher’s perspective as it is unclear as to what the impetus is to complete a graduate degree at such a later point in time. This is detailed in table 3.

| Table 3: Gender and expatriation length at time of program cross-tab and chi-square |
|-----------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                | 0-2 years | 3-5 years | 6-8 years | 9-11 years | 15-17 years | 18+ years | Sub-total |
| Male                           | 7 (100%)  | 12 (92.3%)| 6 (85.7%) | 3 (75%)     | 1 (100%)    | 0 (0%)    | 29 (87.8%)|
|                                | 6.15 (0.12)| 11.42 (0.03)| 6.15 (0.00)| 3.52 (0.08) | 0.88 (0.02) | 0.88 (0.88)|           |
| Female                         | 0 (0%)    | 1 (7.7%)  | 1 (14.3%) | 1 (25%)     | 0 (0%)      | 1 (100%)  | 4 (12.2%) |
|                                | 0.85 (0.85)| 1.58 (0.21)| 0.85 (0.03)| 0.48 (0.55) | 0.12 (0.12) | 0.12 (6.37)|           |
| Sub-total                      | 7         | 13        | 7         | 4           | 1           | 1         | 33        |

\[ \chi^2 = 9.246, df = 5, \chi^2/df = 1.85, P(\chi^2 > 9.246) = 0.0996 \]

Expected values are displayed in italics
Individual \( \chi^2 \) values are displayed in (parentheses)

A fourth point that was surprising was the uniformity in the degree of study. In order to have the visas listed (in most if not all cases), an undergraduate degree is necessary. Thus, studying at the master’s level is completely logical. Yet, for those that already had master’s degrees prior to expatriating to Korea, there are only two instances of doctoral level study, and reasons for this are not forthcoming. However, there were few instances of licensure or certificate programs, or doctoral level study. Some respondents noted that a certificate of some kind was completed as a component of their master’s program, or in addition to it (given the structure of the survey, it was included in the optional comments section). Graduate or professional certificates may not be valued as much as a full degree is. As noted earlier, while master’s level study is logical, there is no obvious reason why those who came to Korea already possessing graduate degrees are not pursuing additional or higher levels of study such as a doctorate, especially if they work in higher education.

A brief explanation of the visa categories is described below but not all statuses necessarily have a direct relationship to any particular employment industry. This is exemplified with the F categories of visa, and to a much lesser degree with the E category. Broadly speaking, the visa classifications that participants held are described below, with an additional set of chi-square analyses in table 4.

- E1 - University Professorship
  - While this is required for official designation as a professor, many working for Korean universities do not necessarily hold this visa and are designated assistant professors or work in other non-credit programs. In practice, this is not necessarily adhered to and circumvented with the E2.
- E2 - Foreign Language Instruction in Conversation Only
As noted above, in practice this visa status is should granted solely for instruction in conversational aspects of a foreign language, although practically speaking many work in areas beyond the scope of the designation (e.g., writing instruction).

- **E7 - Specialized Skill**
  - This researcher is personally mostly familiar with E-7 visas for international school teachers (i.e. licensed content area teachers), though other jobs like copy editing or programming can qualify under this broad (if not vague) designation.

- **F1 - Visiting relatives for an extended period of time**
  - An ethnic Korean who is not a Korean national might be visiting parents, grandparents, siblings, etc. who are citizens for a period greater than 90 consecutive days.

- **F2 - Long Term Residency Visa (merit based)**
  - This is a merit/point-based visa that, among more germaine requirements, requires significant Korean language skill. Holders of this visa are not restricted to any one area of employment.

- **F4 - Ethnic Koreans who are not Korean citizens**
  - This visa is often obtained by members of the Korean diaspora around the world who have originally never had Korean citizenship, or whose family left Korea as a minor, or gave it up to maintain/obtain a different nationality. Adoptees also qualify under this designation.

- **F6 - Marriage to a Korean citizen**

- **H1 - Working Holiday**

### Table 4: Gender and visa type cross-tab and chi-square

<table>
<thead>
<tr>
<th></th>
<th>E1</th>
<th>E2</th>
<th>E7</th>
<th>F1</th>
<th>F2</th>
<th>F4</th>
<th>F6</th>
<th>H1</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29 (87.8%)</td>
</tr>
<tr>
<td>E1</td>
<td>2</td>
<td>18</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(66.7%)</td>
<td>(94.7%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td>(80%)</td>
<td>(50%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td>(100%)</td>
<td></td>
</tr>
<tr>
<td>2.64</td>
<td>16.7</td>
<td>0.879</td>
<td>0.879</td>
<td>4.39</td>
<td>1.76</td>
<td>0.879</td>
<td>0.879</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>4 (12.2%)</td>
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<tr>
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<td>1</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(33.3%)</td>
<td>(5.3%)</td>
<td>(0%)</td>
<td>(0%)</td>
<td>(20%)</td>
<td>(50%)</td>
<td>(0%)</td>
<td>(0%)</td>
<td>(0%)</td>
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<tr>
<td>0.364</td>
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<td>0.121</td>
<td>0.606</td>
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<td>0.121</td>
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<td><strong>Subtotal</strong></td>
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<td>19</td>
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<td>1</td>
<td>5</td>
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<td>1</td>
<td>33</td>
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</table>

Chi-square = 5.64 Degrees of freedom = 7 Probability = 0.582

In briefly scanning the types of programs students were enrolled in, they are almost entirely related to education, which is congruous with the visa categories. Additionally, the geographic distribution of students in the various Korean provinces also reflects the regular population distribution within Korea with about half of the nation residing in the capital (approximately 10 million) or the surrounding metropolitan area (an additional 13 million).

**Contributions**

Although this study is a proverbial first step into uncharted territory, it has provided three pillars for future research to build on in the form of a student definition and taxonomy for global distance students, experiences from with a practical research methodology along with limitations/suggestions, and a discussion of avenues for future research below. Globalization has challenged the traditional
relationships between nations and people, and with greater patterns of migration and access to higher education, there are new relationships to consider and explore in the domain of distance education and the students therein. The hope is that this paper provides the distance education community with a better way to address distance students as a whole, and more effectively identify and address their needs. Moreover, universities and departments can better tailor programs to meet the needs of such students or simply market their programs more effectively. For example, in the field of education, the Korean context presents a number of challenges to the application of inquiry based learning or self-directed learning given that this not the norm in Korean education. How western-based education departments understand or address this for expatriate/transnational distance students remains to be seen. Other legal compliances such as the American FERPA or COPPA do not exist in this context. Similar regulatory/statutory content may ultimately prove to be less useful from a practical standpoint, among other significant differences in how the education system functions, and the perpetually limited roles and influence that expatriate/transnational students have in it as working professionals. This goes far beyond the pedagogical implications for learners that Selinger (2014) described.

Other more germane requirements like degree authentication through apostilles and notarization regulations are required in Korea and presumably other comparable requirements exist elsewhere. The question is whether or not universities, their departments, and support services are prepared to accommodate these unique needs that otherwise do not necessarily exist for national students.

Limitations

First was the unexpected difficulty of identifying distance students under this categorization from within a known database (i.e. a department database), in addition to recruiting participants from an in-situ population locally. These hurdles necessitated the use of non-probabilistic respondent-driven sampling that limited the ability to obtain more data in the form of a larger sample, as well as broader applicability. However, as noted by Hughes (2013) in relation to a similarly small sample of 25 participants with international students, “the findings are intended to be descriptive and indicative, rather than predictive or generalisable” and to offer “personalised, contextualised insights” (p. 139).

Conclusion

This paper has discussed the complexity and nuance of the global distance student population by clearly articulating a definition of the expatriate and transnational distance student. This distinction highlights this phenomenon’s absence in the literature, as well as the more than likely unintentional but problematic biases in other definitions. The findings presented here provide a first look at how the expatriate/transnational distance student is manifested in South Korea through a simple demographic lens, along with their related academic programs. From this vantage point, both the expatriate and transnational distance student fall in line with other descriptions of distance students in the literature, but also raises questions for which there are no clear answers. The insight and context are meant to serve as a starting point for further investigation to address these questions, and explore others not currently asked. This is envisaged in not only the Korean context, but at a regional, and global scale as well.

Future Research

There are numerous opportunities and avenues for future research. In a local context, possibilities include expanding the sampling scope within South Korea through more active participant recruiting methods in addition to having a much longer announcement and data collection period. This should
more effectively address the relatively small sample size in this study. The demographic study can be replicated in other countries to see if there may be trends among the expatriate and transnational distance student population in national, regional, and global scales, or if there are disparate characteristics from host-nation to host-nation.

The sample collected in this study indicated a significant disparity in the gender ratio, but without more data, it is difficult to suggest this is accurate. This scale at which this trend occurs can further be explored. The potential for future qualitative studies such as phenomenological inquiries would give voice to this particular group and provide deeper insight in the essence of a being an expatriate/transnational distance student that is not widely known. Additionally, exploring why foreign residents are opting to attend university in their home countries when earning a local degree would not require the authentication process that is required by the Korean government for visas and the Ministry of Education for Korean nationals who have earned degrees abroad. Yet as this study indicates, there are students willing to incur the extra work and complexity for reasons unknown.

Exploring aspects of isolation would be interesting as well since distance students living in nations with cultures and languages that are different from their own may compound the online isolation often described by distance students more broadly. There is no clear data, either, on the success/attrition rates of this particular population that would yield insight on why either result is the case. While the sample here reported significantly high GPA's, how many do not actually complete their programs and why? Such data could inform university, department, and/or program policies, provide better guidelines for academic support staff, or offer suggestions for instructors to adapt curriculum and/or pedagogical approaches for such students.

Moreover, given that local academic opportunities exist in Korea at all academic levels, often with generous scholarships for foreign residents, it is not known why students are choosing to study elsewhere. In this particular study, the majority of degree programs were focused on master’s degrees in language education and reputable, nearly 100% scholarship granting programs are offered locally in English in the same field! As distance students, numerous opportunities exist to explore technology specific issues as well such as self-regulation or self-directedness in a virtual environment situated in a foreign culture. In short, there is a virtually limitless horizon to explore and numerous future discussions to have.

This researcher hopes to start that discussion by providing a taxonomy to identify and describe expatriate and transnational distance students in a way that is practical, equitable, and globally applicable, share experiences of expected challenges that may be proactively addressed in light of this study, and to inspire the distance education community to explore national, regional, and global trends that are intrinsic to the expatriate and transnational distance student phenomenon.

References


Recognizing the expatriate and transnational distance student


Sinkowitz-Cochran, R. L. (2013). Survey design: To ask or not to ask? That is the question... *Clinical Infectious Diseases, 56*, 1159–1164. http://doi.org/10.1093/cid/cit005


# Appendices

## Appendix A

### Table A: Proposed Concepts and Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Delivery Method</th>
<th>Operational Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global Distance Students (GDS)</strong></td>
<td></td>
<td>To encompass all subcategories of international, expatriate, and transnational distance students</td>
</tr>
<tr>
<td><strong>International Student</strong></td>
<td>Face-to-Face</td>
<td>A student who requires a student visa to attend the institution onsite.</td>
</tr>
<tr>
<td></td>
<td>Distance</td>
<td>A student who is designated as an international student by proxy of citizenship that is different from that of the institution’s country. No visa is needed to attend online and the student resides in their home country of citizenship.</td>
</tr>
<tr>
<td><strong>Expatriate Student</strong></td>
<td>Face-to-Face</td>
<td>A student who does NOT require a student visa to attend the institution onsite by proxy of another non-tourist sojourn status (e.g., working visa, residency visa, dependant visa).</td>
</tr>
<tr>
<td></td>
<td>Distance</td>
<td>A student who does NOT require a student visa to attend the institution at a distance by virtue of having the same citizenship as the the institute, and sojourns abroad with a legal non-tourist status (e.g., work visa, residency visa, dependant visa).</td>
</tr>
<tr>
<td><strong>Transnational Student</strong></td>
<td>Face-to-Face</td>
<td>A student that lives in a geographically dense or deliberately connected group of nations where commuting to country C is possible, while living in country B, and having citizenship from country A. (e.g., the EU). A visa may or may not be necessary for student status.</td>
</tr>
<tr>
<td></td>
<td>Distance</td>
<td>A student whose nationality is different from both their current legal residency, and neither have a visa or citizenship of the institution they are studying at (i.e. a national of nation A, sojourning via a non-tourist visa in nation B, attending a university in nation C). They are designated as an international student by the institution but have local non-tourist sojourn status.</td>
</tr>
</tbody>
</table>
### Appendix B

Table B: Demographic information of participants

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>% of total</th>
<th>Count (n=33)</th>
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</thead>
<tbody>
<tr>
<td><strong>Distance student classification</strong></td>
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<tr>
<td>Expatriate</td>
<td>69.7</td>
<td>23</td>
</tr>
<tr>
<td>Transnational</td>
<td>30.3</td>
<td>10</td>
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<tr>
<td><strong>Nationality</strong></td>
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<td></td>
</tr>
<tr>
<td>Canada</td>
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<td>6</td>
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<tr>
<td>New Zealand</td>
<td>3.3</td>
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</tr>
<tr>
<td>United States</td>
<td>54.5</td>
<td>18</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>24.2</td>
<td>8</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>87.8</td>
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<tr>
<td>Female</td>
<td>12.1</td>
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</tr>
<tr>
<td><strong>Relationship status</strong></td>
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<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>57.6</td>
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<tr>
<td>Married</td>
<td>36.4</td>
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<tr>
<td>Divorced</td>
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<td>2</td>
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<tr>
<td><strong>Age while completing the program in country</strong></td>
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</tr>
<tr>
<td>15 - 24</td>
<td>9.1</td>
<td>3</td>
</tr>
<tr>
<td>25 - 34</td>
<td>36.4</td>
<td>12</td>
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<tr>
<td>35 - 44</td>
<td>45.5</td>
<td>15</td>
</tr>
<tr>
<td>45 - 54</td>
<td>9.1</td>
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<tr>
<td><strong>Visa status during the program</strong></td>
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<tr>
<td>E-1</td>
<td>9.1</td>
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<td>E-2</td>
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<td>E-7</td>
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<td>F-1</td>
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<td>F-2</td>
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<td>F-4</td>
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<td>F-6</td>
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<td>1</td>
</tr>
<tr>
<td>H-1</td>
<td>3</td>
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<td><strong>Geographic location within Korea</strong></td>
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<td>Seoul, Teukpyolshi</td>
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<td>18</td>
</tr>
<tr>
<td>Gyunggido</td>
<td>27.3</td>
<td>9</td>
</tr>
<tr>
<td>North Gyeongsangdo</td>
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</tr>
<tr>
<td>South Gyeongsangdo</td>
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<tr>
<td>South Jeollado</td>
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<td>North Chungjeongdo</td>
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Table B (Continues...): Demographic information of participants

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>% of total</th>
<th>Count (n=33)</th>
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<tbody>
<tr>
<td>Length of expatriation in Korea at time of the program</td>
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</tr>
<tr>
<td>0-2 years</td>
<td>21.2</td>
<td>7</td>
</tr>
<tr>
<td>3-5 years</td>
<td>39.4</td>
<td>13</td>
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<tr>
<td>6-8 years</td>
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<td>7</td>
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<tr>
<td>9-11 years</td>
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<td>4</td>
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<td>15-17 years</td>
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</tr>
<tr>
<td>18 years +</td>
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<tr>
<td>Employment Status</td>
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<td>Full-time</td>
<td>90.9</td>
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<td>Part-time</td>
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<td>Freelance</td>
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<tr>
<td>Unemployed and not looking for work</td>
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<td>1</td>
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<tr>
<td>Number of prior earned degrees (Bachelor’s and higher)</td>
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<td>1 degree</td>
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<td>4 degrees</td>
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<td>Prior distance course programs taken</td>
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<td>1</td>
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<td>Principal industry of employment</td>
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<td>Education</td>
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<td>Government</td>
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<td>Unemployed</td>
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<td>Average number of courses taken per semester</td>
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<td>21</td>
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<tr>
<td>3-4</td>
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<td>7</td>
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<td>5-6</td>
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<tr>
<td>6 or more</td>
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<tr>
<td>Other</td>
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<tr>
<td>Grade point average</td>
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<td>3.6-4.0</td>
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</tr>
<tr>
<td>3.1-3.5</td>
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</tr>
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<td>2.6-3.0</td>
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<td>N/A</td>
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<td>4</td>
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<tr>
<td>Other</td>
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"Open Praxis", vol. 9 issue 4, October–December 2017, pp. 463–481
Appendix C

Table C: Characteristics of participant’s academic programs

<table>
<thead>
<tr>
<th>Academic program characteristics</th>
<th>% of total</th>
<th>Count (n=33)</th>
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<tr>
<td><strong>Geographic location of the program</strong></td>
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<td>Australia</td>
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<tr>
<td>United Kingdom</td>
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<tr>
<td>United States</td>
<td>60.6</td>
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<td><strong>Type of institution</strong></td>
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<td>Public</td>
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<td>Private</td>
<td>39.4</td>
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<td><strong>Program delivery method</strong></td>
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<td>Online (100%)</td>
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</tr>
<tr>
<td>Hybrid (&lt;100%)</td>
<td>30.3</td>
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</tr>
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<tr>
<td>7-8 week quarter</td>
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<td>4</td>
</tr>
<tr>
<td>10 week semester</td>
<td>27.3</td>
<td>9</td>
</tr>
<tr>
<td>15-16 week semester</td>
<td>45.5</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
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<td>5</td>
</tr>
<tr>
<td><strong>Level of study</strong></td>
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<td>Bachelor's</td>
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<td>Master's</td>
<td>84.9</td>
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<td>Doctoral</td>
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<tr>
<td>Certificate</td>
<td>3</td>
<td>1</td>
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<tr>
<td><strong>Cost of program in local currency (1 million won = app. 900 USD)</strong></td>
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<td></td>
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<tr>
<td>0-10 million won</td>
<td>18.2</td>
<td>6</td>
</tr>
<tr>
<td>10-20 million won</td>
<td>54.6</td>
<td>18</td>
</tr>
<tr>
<td>20-30 million won</td>
<td>18.2</td>
<td>6</td>
</tr>
<tr>
<td>30-40 million won</td>
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<td>1</td>
</tr>
<tr>
<td>40-50 million won</td>
<td>6.1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Major/focus of program</strong></td>
<td></td>
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<tr>
<td>M.S. Instructional Design &amp; Technology</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>MA TESOL/Applied Linguistics/TESL/TEFL</td>
<td>45.5</td>
<td>15</td>
</tr>
<tr>
<td>M. Education</td>
<td>12</td>
<td>4</td>
</tr>
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<td>M. Educational Technology</td>
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<td>M.S. Educational Leadership</td>
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<td>M.S. International Management</td>
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<td>1</td>
</tr>
<tr>
<td>M. Business Administration</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>M. Curriculum &amp; Instruction</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>M.F.A. Creative Writing</td>
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<td>1</td>
</tr>
<tr>
<td>B.S. Communication</td>
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Table C (Continues...): Characteristics of participant's academic programs

<table>
<thead>
<tr>
<th>Academic program characteristics</th>
<th>% of total</th>
<th>Count (n=33)</th>
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<tbody>
<tr>
<td>B. Information Science &amp; Technology</td>
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<td>1</td>
</tr>
<tr>
<td>Ed.D. Literacy, Culture, &amp; Language Education</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Ed.D. Educational Technology</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>DELTA Certificate</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Teacher Licensure</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
Book review of *MOOCs and Their Afterlives*


Reviewed by: Daniel Domínguez

*Universidad Nacional de Educación a Distancia – UNED (Spain)*

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What was once known as open and distance learning is now almost entirely incorporated into the conceptual framework of massive open online courses (MOOCs). It is well known that MOOCs are not always courses, nor always open, nor always massive. There are a wide variety of MOOCs, making it difficult to establish a clear definition according to course type. Nevertheless, MOOCs currently serve as a frame of reference for discussing digital education. This book attempts to enlighten the reader about the MOOC phenomenon by carrying out a rigorous exploration of this conceptual and applied amalgam. The aim of this book is to carry out a review of the experimental work carried out in the field of digital learning. The information included should assist the reader in identifying what are known as the “afterlives of the MOOCs”.

The editor’s main achievement was to categorize cases and experiences according to theme. The chapters found in “Part 1: Data Driven Education” focus on issues of scale. Scale has historically been a significant challenge for open & online learning experiences. In the early years of distance education, scale was considered to be double advantageous. First, distance courses initiatives facilitated access to learning, mainly in higher education, to a greater number of people. And also, the scalable organizational methodologies simplified course management and institutional logistics through incremental processes that could respond to the demands of a growing number of enrolled students. These two approaches now add a new one, related to the management —also “scalable”— of the data generated in digital learning practices. Here too, the scale functions in two directions. On the one hand, information analytics facilitates the provision of personalized learning services to large and heterogeneous groups of students. On the other hand, by receiving direct attention, smaller groups of students can benefit from knowing about behaviour patterns that have been elucidated through data science techniques. This section may be of interest to designers of institutional courses for large groups of students (xMOOCs?) and instructional design professionals.

The chapters in “Part 2: Connected Learning” cover connected learning experiences and delve into the learning theories that are applied in the design of MOOCs. There are varying approaches to “connectivity” in the different education theories. One approach gives rise to “connectivist” MOOCs, which are based on Connectivism Theory. Some courses, however, are based on Connected
Learning. These rely on peer collaboration, are guided by student interest, and are open to a network of community actors. Examples of both approaches can be found this section.

“Part 3: Openness and Critical Pedagogy” covers alternative theoretical approaches that give rise to practices that have a cross-conceptual basis. This cross-conceptual approach is observed in the case of feminist and critical theories, which encourage the creation of peer communities that reject the figure of the professor/instructor and seek alternatives to the traditional banking and industrial models of knowledge dissemination that are characteristic of conventional digital distance learning environments. Cross-conceptual approaches are also seen in theories that are centred on opening up the didactic process and community participation in course development.

The book ends with “Part 4: The Pathos of the MOOC Moment” and “Part 5: MOOC Critiques”. These sections deal with some of the problematic aspects of the emergent field of MOOCs from a variety of perspectives. Some of the subjects covered are: the perceived paternalism associated with the digital universalization of education, the paradoxical feelings students have of isolation versus companionship when studying in digital spaces, and the externalization of education, which can lead to the platforms and data falling into the hands of profit-seeking corporations. The subjects covered in this section are quite diverse, perhaps too diverse.

In summary, this book reflects the current state of MOOCs, their doctrines, their potential, and the questions they precipitate. This text will be especially interesting for education professionals interested in designing and participating in an open online course. This book should also interest educational institution administrators that want to expand their field of action into the terrain of the Internet or who want to innovate online experiences that are already in place. The principal value of this book is that it allows the reader to understand the current reality of open and distance learning, a reality that has already gone beyond MOOCs.
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