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Advancing learning through smart learning analytics: a review of case studies

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Abstract

Purpose – Smart learning analytics (Smart LA) – i.e. the process of collecting, analyzing and interpreting data on how students learn – has great potentials to support opportunistic learning and offer better and more personalized learning experiences. The purpose of this paper is to provide an overview of the latest developments and features of Smart LA by reviewing relevant cases.

Design/methodology/approach – The paper studies several representative cases of Smart LA implementation, and highlights the key features of Smart LA. In addition, it discusses how instructors can use Smart LA to better understand the efforts their students make, and to improve learning experiences.

Findings – Ongoing research in Smart LA involves testing across various learning domains, learning sensors and LA platforms. Through the collection, analysis and visualization of learner data and performance, instructors and learners gain more accurate understandings of individual learning behavior and ways to effectively address learner needs. As a result, students can make better decisions when refining their study plans (either by themselves or in collaboration with others), and instructors obtain a convenient monitor of student progress. In summary, Smart LA promotes self-regulated and/or co-regulated learning by discovering opportunities for remediation, and by prescribing materials and pedagogy for remedial instruction.

Originality/value – Characteristically, Smart LA helps instructors give students effective and efficient learning experiences, by integrating the advanced learning analytics technology, fine-grained domain knowledge and locale-based information. This paper discusses notable cases illustrating the potential of Smart LA.

Keywords Big data, Education, Learning analytics, Ubiquitous learning, Smart learning analytics, Smart learning environments

Paper type Case study

Introduction

Since its emergence, learning analytics (LA) has continued to prove its importance to the field of education. LA involves measuring, collecting, analyzing and reporting contextual learner data for understanding and optimizing learning and learning environments (Siemens, 2012, p. 1382). LA has the potential to create better learning experiences customized to individual preferences, strengths and needs (Clow, 2013; Siemens, 2012). The customization of learning experiences can be intensified when all learning related activities are observed at finer levels of granularity – including episodes of study by students, episodes of assessment preparation and completion, and episodes of teaching – to generate awareness/insights about what learners know and how to promote constructive learning (Kumar, Kinshuk, Pinnell and Paulmani, 2017; Pinnell et al., 2017).
Recent learning models have moved the conversation from rote learning to focusing on inclusive or personalized learning. Consequently, it has exposed a critical question about how learning can be made practical and relevant to students. It is increasingly evident that tests and/or examinations based on memorization do not effectively aid learners in absorbing and applying knowledge. Hwang et al. (2008) and Yahya et al. (2010) argue that when students perceive learning as meaningful and relevant, they are motivated to learn with enthusiasm. In addition, Lage et al. (2000) and Sampson et al. (2002) emphasize the importance of inclusive learning for all students. Accordingly, educational goals should focus on ways to support students by focusing on their individual strengths and weaknesses. Moreover, learning should be able to take place whenever and wherever an opportunity is available, and not be limited to a fixed time or location. Such an opportunistic learning process requires the ubiquitous presence of learner support, such as timely feedback or technological assistance. Contemporary learning models are moving toward more omnipresent and contextualized learning – where personalization ensures that students can learn at their own pace and receive customized feedback addressing individual strengths and weaknesses, following the theory that learning that happens spontaneously in real life is more difficult to forget (Sampson et al., 2002).

Correspondingly, the concept of “smart learning” has evolved as the conceptualization of learning changed. Experts have highlighted the importance of using technology to improve learning, following the emergence of adaptation and personalization as two key components of smart learning (Gros, 2016). A good technological design goes beyond simply using the latest technology in education, to nurturing smart behavior by amalgamating various technologies for collective use (Højer and Wangel, 2015). Under the theme of “smart learning,” ideas such as “seamless learning” and “ubiquitous learning” have emerged. Sharples et al. (2014) argued that seamless learning allows a person to experience learning continuously “across a combination of locations, times, technologies and social settings.” Ubiquitous learning can be understood as learning experience that is more distributed across time and space, such that students can learn in environments where the line between work and play, and public and private, becomes blurred (Burbules, 2012). Essentially, “smart learning” does not merely emphasize technology-enhanced learning, but offers a way to improve learning experiences by integrating various technologies, environments and content.

Researchers and educators have turned their attention to the idea of incorporating an element of “smart” into LA. Smart learning (Smart LA) analytics is a subclass of LA that supports certain processes and characteristics of smart learning (Giannakos et al., 2016). Educators can use Smart LA to discover and analyze data on student behavior, instruction merit and the suitability of learning environments, gathering information from various sources to discern learning traces that can facilitate instructional support (Kinshuk, 2017). The development of big data, and new ways to connect and exchange information, has laid the foundation for more interactive and personalized learning. Data on learner capabilities and competencies, and the settings where students use specific technology, are useful for analyzing learner actions, interaction, trends in preferences and changes in ability levels. Consequently, instructors can identify each student's learning trace – i.e. “a network of observed study activities that lead to a measurable chunk of learning” (Kumar, Kinshuk, Pinnell and Paulmani, 2017; Pinnell et al., 2017) – which is a major source of data for LA. Learning traces make personalization possible, such that individual students with distinct learning preferences can adopt different learning approaches even for the same learning activities.

Many researchers have studied areas such as how instructors can use LA to better understand student capability, how to design smart environments and how to apply existing technologies. However, few have explored the ability of Smart LA to promote engaging and personalized learning, i.e. smart learning. In the existing work,
Boulanger et al. (2015) examined Smart LA using a case study on the Smart LA framework SCALE, and its effectiveness in improving student learning outcomes. Similarly, Giannakos et al. (2016) explored the concept of Smart LA using video-based learning.

This paper reviews cases relating to the implementation of Smart LA, and offers an overview of the latest developments and trends in Smart LA. It examines the use of various online platforms and/or software tools to facilitate smart learning through Smart LA. The paper begins by reviewing multiple case studies on Smart LA to identify key features. Subsequently, it surveys how instructors can use Smart LA to better understand student ability and learning progress, and thus promote more personalized learning.

Case studies of Smart LA

Procedure evaluation/E-learning/E-training Tool – PeT

PeT is a training and testing system designed for workers in the oil and gas industry. It aims to familiarize trainees with various emergency operating procedures (Boulanger et al., 2014). It adopts task-related knowledge structures, chunking and laying out tasks in a hierarchical model with an unlimited number of layers (Johnson et al., 1988). The procedural tasks for training are selected and prioritized by several parameters that include: the requirements of the institution’s training framework; the personal needs of a trainee as determined by himself/herself; and the recommendations of the PeT analytics system. Training and testing scenarios adapt to the profile of the trainees, changing as they make decisions within the PeT system. The PeT analytics system continuously tracks certain fine-grained data to provide information on user profiles. These include navigation pathways session, question, deliberation before selecting a choice and choice selection. For example, session data include the time taken by a learner to complete various activities within a session, and the data corresponding to the procedural activities attempted within the session; question data include not only the final answer, but also the navigational pathways of trainees as they proceed toward an answer in authentic environments (Boulanger et al., 2014). Accordingly, organizations can use such data to manage and optimize knowledge assets and human capital. Essentially, PeT creates a competence portfolio for each trainee depending on experience and expertise. The portfolio helps to diagnose and predict whether the trainee has the proper skillset for executing tasks, and it also provides remedial instructions to address trainee weaknesses by analyzing the interaction between the trainee and the objects in an authentic (e.g. augmented reality, virtual reality and simulated) task environment. Trainees have access to both virtual reality episodes (of targeted steps in each procedure) and augmented reality experiences in collaborative task activities, which are part of an instructional design that employs the Assessing the Learning Strategies of AdultS instrument to customize activities based on prevalent learning strategies adopted by the trainees.

Augmented reality training/testing (ART)

ART provides an immersive training and testing environment for augmented-reality-oriented training, providing trainees with multimedia lessons using animation, interactive maps and customized learning activities. Bacca et al. (2015) introduced an ART application, Paint-cAR, to help students on a vocational training program in car maintenance. Specifically, it engages students to become familiar with the procedural steps for repairing the paint on a car, including safety measures and identification of chemical tools or products. With Paint-cAR, students can interactively practice the procedure step by step in a virtual world. The application provides three modes – guided, evaluation and informative modes – for students to choose from, and offers flexibility in terms of the degree of guidance, accessibility of information and the sequence of training. Students also get timely feedback when they take a wrong step. Bacca et al. (2015) found that it had positive effects on the dimensions of
attention, relevance, confidence and satisfaction, which were core contributors to increasing motivation in learning. An ART application with a good design not only enhances the trainees’ level of engagement, but also addresses the limitations of one-size-fits-all curricula, and hence supports a more personalized learning experience (Bacca et al., 2015). The pedagogical approach prescribed in ART can be applied in other domains as well.

**CODing experience (CODEX)**
CODEX is a coding analytics software designed to capture the coding experiences of students in areas such as design, debugging, testing and optimization, from within an integrated development environment such as NetBeans (Seanosky et al., 2016; Kumar et al., 2018). It tracks programming activities, such as the design of Unified Modeling Language diagrams, debugging and even keystrokes, and records them securely. Using these data, CODEX attempts to recognize design, coding, debugging, testing and optimization strategies of students. In addition, it analyzes the functionality of the program designed by students, offering proactive feedback to help them develop as professional programmers. It can observe in real time various coding habits of students in different parts of the world who are working on similar problems and connect compatible students (Kumar et al., 2018). Given that teachers are often unaware of the problems students face when solving programming problems, they can use CODEX to gain more real-time awareness of the CODEX and coding habits of their students, and to offer just-in-time feedback. Students can get timely and highly contextual feedback from teachers, classmates and/or anyone from anywhere on the planet working on a similar problem. Notably, this system offers students a global perspective. The system can collect the coding habits of top students in a library, with their permission, and share it with novice programmers across the world.

**Mixed-initiative dashboard (MI-DASH)**
MI-DASH is a web-based learner-centric dashboard that offers query, visualization and self-reflection interfaces, and presents student learning progress, capacity and performance. It presents the results of analyses carried out by Smart Competence Analytics on LEarning (SCALE) engine (Boulanger, Seanosky, Clemens, Kumar and Kinshuk, 2016; Boulanger, Seanosky, Pinnell, Bell, Kumar and Kinshuk, 2016). SCALE is a smart analytics technology that measures student competence by translating learning traces from data collected from different learning sensors such as CODEX. MI-DASH can visualize the student proficiency level per learning activity and monitor the confidence levels over time. Basically, it provides both an overview of student learning performances and details of their competencies. In addition, MI-DASH can identify the student confidence levels, which can influence capability. This function is significant, given that the knowledge of correct steps and/or procedures does not necessarily equal to confidence to execute them. This system computes how well students perform certain skills over time. The more consistently students use specific skills correctly, the more confident they become (Boulanger et al., 2014).

**Self-/Co-regulated learning (SCRL)**
SCRL is a tool created to measure and improve the student ability during self-regulated and co-regulated learning (Pinnell et al., 2015). Self-regulated learning involves students being self-directed, taking initiatives to “set their goals, select and deploy tactics, monitor their own actions and evaluate their own effectiveness” (Zheng et al., 2015). Also, students can manage their own learning tasks and engage the coursework in a robust manner (Boulanger et al., 2015). SCRL offers a way to rectify loopholes in “generic” contemporary educational systems by giving students more control of their personal learning process, and allowing them to set goals and design strategies to achieve those goals (Pinnell et al., 2015).
SCRL works with different types of learning sensors, such as MI-WRITER and CODEX for data collection, and it provides a dashboard to visualize student proficiency levels in various domains. In addition, the system offers students diverse initiatives that can help them enhance proficiencies or improve deficiencies (Seanosky et al., 2016). Students can choose the types of competence they want to improve and expect guidance on ways to achieve success.

The system provides real-time monitoring and immediate feedback. It recommends changes to student initiatives whenever it detects possible obstacles to progress (Pinnell et al., 2015). Similarly, teachers can use this system to monitor student progress. They can employ an immersive communication system to create a learner group for students with similar goals and create shared initiatives to address specific weakness of certain groups of learners. These features promote effective self-regulated and co-regulated learning, which are proven to be essential components of successful online learning environments (Zheng et al., 2015).

**Writing analytics – MI-WRITER and 2Write**

Writing is a process best taught in a formative manner. However, most educational settings regard writing as a product and assess it in a summative manner. Writing analytics offers teachers the opportunity to observe student-writing behavior at finer levels of granularity, informing on the evolution of writing competences such as grammatical accuracy, topic flow, transition and vocabulary usage. Teachers can use MI-WRITER (Clemens et al., 2017) to gain potential insights about the writing processes of students, and to engage students in trace-based scaffolding for developing writing skills.

MI-WRITER is a learning sensor designed to measure English writing competences in both language and content. In the language aspect, MI-WRITER can track certain data produced by students performing writing exercises, including grammatical and spelling errors, sentence patterns, ability to correct errors and the speed of writing. In the content aspect, the MI-WRITER records the flows and formation of topics. This process of analyzing various features of writing and quantifying student performance allows for real-time feedback on ways to enhance English writing efficiency and quality.

2Write (Boulanger et al., 2018; Mitchnick et al., 2017; Kumar, Kinshuk, Pinnell and Paulmani, 2017; Kinshuk, 2017) is another writing analytics tool for enhancing English writing competence. It is compatible with learning management systems such as Moodle. 2Write collects data from students as and when they work on assignments, and provides a dashboard showing the areas to improve on. It captures every character a student enters, and performs real-time analysis. With the aid of this tool, students can self-monitor their progress and set their own goals to achieve desired writing abilities.

**MUSic eXperiences (MUSIX)**

MUSIX employs LA to enhance both music-related learning experiences of students, and teaching approaches by instructors (Guillot et al., 2015). The system collects data from sources such as music theory lectures, instrumental performances and vocal trainings. MUSIX analyses the collected data and displays the results on a dashboard that highlights student musical competencies. Subsequently, the system provides customized feedback based on the identified learning trace of individuals. Also, it features precise instruction, games and quizzes to improve the competence levels of learners, and utilizes self-regulation and co-regulation techniques to help learners build a deeper understanding of their music skills and plan strategies to improve their skills.

The above systems briefly reviewed displayed some commonalities in analytics functions, system structure and user experiences. The next section identifies these features, which are conceived as the pillars of Smart LA systems.
Key features of Smart LA

As the cases above show, Smart LA involves a thorough study of learners and learning environments. Smart LA requires various types of data to identify learning traces that inform on building better learning environments. Researchers and/or teachers face the challenge of discovering relevant data sources and extracting useful information, and effectively analyzing and interpreting the data, as it becomes available.

Teachers, students and parents can observe changes in learner competence levels by studying corresponding learning traces. A learning trace is created when both a student’s fine-grained learning activities and study outcomes are compiled and interpreted at different points in time. These real-time results can support customized learning that meets individual learner needs. Such customization can be an individual endeavor (i.e. teacher or student or parent) or a collaborative effort. With Smart LA, researchers can reliably evaluate and predict the nature of learning occurring in different environments, including learner efforts and efficiencies. Consequently, various agencies can offer appropriate institutional support based on policies that target competency-based learning.

The following sections discuss key features of Smart LA, including how it provides essential insights into learning, how it embeds certain functionalities to create better learning experiences and how it makes personalized learning possible.

Learner awareness

Smart LA promotes acute learning awareness. As the case studies above indicate, learners are better served with information about their own progress in the learning process. Students who are aware of their learning behavior can track their study progress and seek adequate help to improve study habits (Ebner et al., 2015). Smart LA makes learners more aware of ways to achieve their best performance. One of the feedback channels of Smart LA is the visualization of learning progress. Such visualization should be carefully designed for seamless communication among students, teachers and the analytics system, such that effective pedagogical interventions becomes possible.

There are various data sensors providing learner information such as performance level, meta-cognitive skills, cognitive skills, learning strategies, effective state and physiological symptoms. Smart LA can use such data sets to personalize study experiences. In many cases, personalization begins with learner modeling, which extracts both the characteristics of learners and the pertinence of learning strategies from the raw data sets. In learner modeling, models emerge from observing the interactions between learners and their instructional environments that reveal pertinent learner information such as knowledge levels, weaknesses and misconceptions (Bull and Kay, 2010). A learner model continuously updates as data arrive from sensors, and Smart LA allows learners access to these models that individualize learning experiences and allow learners to reflect, plan and control their own learning.

Technology awareness

Technology is vital to Smart LA. Technology awareness ensures the best use of the software, and facilitates content customization and the personalization of learning. Users must understand the key functionalities of various technologies and devices embedded in Smart LA and e-learning software, to fully utilize the resources and dynamically optimize content to suit functionality (McKenny and Reeves, 2016). For example, instructors should know what kind of device or technology will best support their teaching. Functionality refers to the tools embedded in a device or software that helps it accomplish its tasks, (Gros, 2016). Functionality includes items such as display facility, audio and video capability, multi-language capacity and operation platform quality. In the MUSIX example above, the software uses both the audio capability tool and the MIDI connection between
instrument and computer to collect and analyze learner data from vocal or instrumental practice (Guillot et al., 2015).

Another noteworthy issue is big data centralism. Smart LA is powerful in its ability to bring different sources of data together (Ebner et al., 2015). Advancements in technology mean that people can use different devices to access Smart LA software, while the aggregation of generalized data remains central. In addition, software such as MI-DASH and SCRL provide platforms for central data mining across various LA tools to facilitate self/co-regulation. Also, continuous data analysis helps pedagogical scientists, or the system itself, to acquire new knowledge structures from the analyzed data, and derive better knowledge structures that benefit the dynamical adoption of learner needs (Clemens et al., 2017; Clemens, n.d.).

Location awareness
Location-based technologies facilitate location-based learning. The former helps to identify the location of learners when they are using the software, and, according to Greer (2009), the latter transfers knowledge using the location-based intelligence of wireless interface and sensor networks, which continuously adapt to user location (cited in Martin and Ertzberger, 2013, p. 77). Current wireless technologies have positioning systems such as GPS, Wi-Fi, RFID chips and Bluetooth that can automatically detect user locations. Location – both the physical location of learners and the opportunities to learn – is essential to contextual learning (Brown et al., 2010). Opportunities for learning are increasingly location-sensitive. For instance, the ability to identify students in nearby locations with similar characteristics and learning preferences makes it possible to link them up for their mutual learning benefits. A museum using QR codes is another example of location-sensitive learning opportunity.

Surrounding awareness
The idea of mobile learning emerged following advancements in location-aware technologies and devices. Mobile learning refers to the ease with which learning moves with learners, and is not restricted to learning facilitated by mobile devices (Walsh, 2011). Ally and Prieto-Blazquez (2014) further stressed that mobile learning is not about technology, but about putting learners at the center of learning. It is about learners who are “mobile.” Basically, technology provides the tools that enable learners to learn in various contexts, while mobile learning promotes the development of relevant learning activities based on both learner-specified objectives and certain context-aware knowledge structures of different domains. The term “context-aware” refers to providing users with information relevant to their tasks within specific contexts (Abowd et al., 1999, cited in Kinshuk et al., 2016).

Mobile learning engages students in the context of their environments, providing authentic interactive activities, and making informal learning easier (Martin and Ertzberger, 2013). Learning embedded in the surrounding environment helps students learn wherever they want. Consequently, real-life physical objects become essential vehicles for location-based adapted learning. For example, it has become common practice for museums to attach QR codes to different exhibition boards, in both indoor and outdoor settings. Learners with smartphones or equivalent devices can obtain additional information and interact with digital representations of displayed items by scanning the QR codes. Such mobile learning systems, when designed well, exemplify both ubiquitous and personalized learning (Kinshuk, 2017). For example, when a user repeatedly scans the same QR code, a well-designed personalized system should be able to identify the user’s learning progress and adapt subsequent information, rather than giving the same information every time.

Understandably, surrounding awareness cannot be divorced from cultivating smart learning environments. Combining the advantages of both physical classrooms and various virtual learning environments – which are facilitated by the holistic internet of things and certain ubiquitous sensing devices – provide the full toolkit for context awareness.
How can smart LA give instructors a better understanding of their students?

Mapping learning outcomes to specific skills

The effectiveness of student assessment depends on the effectiveness of the infrastructure design of the supposed system (Yassine et al., 2016). Smart LA should include a dynamic course map that produces chronological lists of all learning outcomes, together with the best approaches to achieving learning goals and assessments methods. Ideally, learning outcomes should be further mapped to specific skills, to give instructors a better understanding of each individual student’s competence level in different areas. In addition, there should be a method or framework that helps to make the comprehensive knowledge base measurable, or, more precisely, “quantifiable” (Loewen et al., 2015). Smart LA software use certain embedded frameworks to map a baseline of quantified knowledge relevant to creating learning objectives for learners. Therefore, instructors can use clear and measurable learning outcomes to continuously track with ease student proficiency levels in specific skills.

Dashboards for teachers

The Smart LA platform should have dashboards for teachers to monitor individual and group learning progress. Visual feedback, or feedback channel, is important to teachers getting information about class performance, or knowledge of how well the Smart LA platform is enhancing learning (Ebner et al., 2015). Teachers can access triangulated data about issues faced by students on such dashboards. For example, line charts of task specific competence levels indicating skill history or bar charts overviewing learner capacity in different skills. Teachers can use such visual aids to dynamically check student competence levels and detect their pedagogic needs. More importantly, both teachers and learners can perceive learning as a highly active and dynamic growth process, rather than seeing it as a single “snap shot” (Kumar, Kinshuk, Pinnell and Paulmani, 2017). Teachers and students can follow a learning timeline and see how learning has influenced performance over a certain period.

Thus, teachers can use the available data to tailor course offerings (Van Harmelen and Workman, 2012). Widely sourced analytics, not limited to student capability, provide teachers with better understandings of student learning preferences, the technologies they have used and their preferred places to learn. For example, a teacher who knows the type of technology a learner is using can customize instructions to that technology (Kinshuk, 2017). Since Smart LA continuously records student preferences over long periods of time, teachers can more easily notice changes, or predict student preferences. Smart LA achieves the promise of tailormade educational opportunities based on student needs and abilities through data mining, interpretation and modeling (Van Harmelen and Workman, 2012).

IMS caliper framework

The IMS Caliper framework tracks and shares online learning interaction data (Zheng et al., 2015). It comprises three major components – a learning events sensor, an analytics server and an analytics dashboard. The learning events sensor collects data from learning tools. The analytics server connects various data types and engages learners in carrying out “initiatives-based intelligent interactions,” which encourages self-regulated learning. The analytics dashboard uses an interactive interface to report
Lambda. Lambda is an LA platform that centralizes, senses, analyses and demonstrates analytics data from different software tools. It is a competence management system measuring both learner proficiency and confidence levels (Seanosky et al., 2016). A wide range of learning domains can be reported on one platform, giving both teachers and learners a clearer and broader picture. The first part of Lambda is about its sensing technologies. CODEX, MI-WRITER and SCRL are examples of the client-side sensor-based technologies, which can detect learning activities in different learning domains and provide raw data for further analysis (Boulanger et al., n.d.). The second part involves a processing and analysis engine. The processor receives raw data from different sensors and makes sense out of them according to certain stipulated learning outcomes. The final part is about visualization and reporting. LA aims to provide customized feedback that helps individual learners work on their own weaknesses, and results in higher knowledge levels (Siemens, 2012). Essentially, while human feedback can be biased, Lambda provides an accurate analysis of learners based on corresponding performance data, which prevents students from overestimating or underestimating their capabilities (Seanosky et al., 2016).

SCALE. SCALE is another LA platform that aims to collect learning traces from different learning domains, and analyze respective competency levels. Unlike Lambda, SCALE can be embedded in course management systems, such as the blackboard, and several automated testing tools that make detected data reliable and relevant for learning outcomes (Boulanger et al., 2015). However, SCALE and Lambda have generally similar architecture. Like Lambda, SCALE has sensing, analysis and visualization layers. In addition, it includes an extra layer, “the competency layer,” which converts analysis results of various competencies and links them to learning outcomes (Boulanger, Seanosky, Pinnell, Bell, Kumar and Kinshuk, 2016).

Boulanger et al. (2015) reported an experimental study showing that SCALE has great potentials to improve the student performance. They found that classes that adopted the new e-learning tracing-oriented technologies generally performed better than the classes that followed conventional teaching methods. In brief, SCALE centralizes the generation, interpretation and display of learning events. However, it is important to note that the lack of a control group weakened the validity of this experiment. Their findings showed that the new design was likely to be effective in optimizing student learning experiences; however, the system adoption time might make the process longer.

Conclusion
The “smartness” of Smart LA depends on how adaptive the system is, and how well it is able to sense, infer, anticipate and promote self-learning/organization (Uskov et al., 2017, p. 194). Smart LA strives to facilitate context-aware learning by tracking learner capability in as many learning activities as possible, and offering tailormade feedback to improve learning. It facilitates self-regulation, such that learners can visualize their personal learning progress and design learning plans for themselves.

Today, Smart LA and smart learning environments are indispensable. Smart learning environments use technology to ensure that learning can happen anywhere, and Smart LA enhances the “smartness” content by addressing issues such as the extent of customization, the scale of ubiquity, and the degree of self/co-regulation. With maturity, Smart LA will have tools to offer students more intricate support. For instance, Smart LA could recommend to learners the most suitable learning or career paths based on their learning profiles (Boulanger et al., 2015). Such developments are focused on improving learning experiences and making learning more omnipresent and highly contextual for all learners.
References


Further reading


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Open Universities: the next phase

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Abstract

Purpose – The purpose of this paper is to report on research on the views of Presidents and Vice Chancellors of Open Universities of current threats and opportunities for their institutions as the author marks the 50th anniversary of the first Open University in the UK established in 1969. The paper offers a historical account of the development of the Open University model, and assesses the extent to which it remains in the key position as owner of innovation in the higher education sector.

Design/methodology/approach – Interviews were conducted with leaders of Open Universities or distance teaching universities. They covered a total of 14 universities.

Findings – The replies from institutional leaders reveal the current developments, opportunities and strategic challenges of the universities. It is suggested that the digital revolution along with a wider range of environmental changes for higher education have substantially eroded the first-mover advantage that Open Universities had undoubtedly enjoyed in the first 25 years.

Originality/value – The paper concludes that there are significant concerns that innovation in Open Universities is not sufficiently embedded to ensure that their contribution to the UN Sustainable Development Goals will be maximised, or even in some cases their survival, and that a key but undervalued element is leadership development for innovation and change.

Keywords Open education, Open University, Sustainable development goals, Leadership in distance and online learning

Paper type Research paper

Introduction

This paper reports on an increasing number of recent commentaries expressing concern about the performance and achievement of Open Universities some 50 years after the establishment of the new model for a university, and assesses the sustainability of the Open University model for the next 15 years as governments seek to fulfil the UN Sustainable Development goals (SDGs). The paper also reports on a small investigation of attitudes to these issues from a roundtable of Open University Presidents, Rectors and Vice Chancellor who met in 2017 in Toronto, and identifies the need for renewed international programmes of leadership development as key to the future of their institutions.

Open Universities in the modern sense have a record of nearly 50 years of operation, dating from the foundation of the Open University UK in 1969. There are other claimants to the title of first Open University, namely, the University of London External Examinations system, from 1858, and UNISA, the University of South Africa, from 1948 onwards. However, a recognisable Open University using distance education as a single mode of delivery is about 50 years old. 1969 was the same year that Neil Armstrong first walked on the moon, and while there was more profile for that event than for a university of a new type established in the UK, nonetheless the first ten years of the Open University also generated enormous excitement. Back in 1981, Daniel and Stroud (1981) were moved to write:

A revolution in education was proclaimed with appropriate hyperbole, buses were rented with the international academic jet-set of academic pilgrims descending on Milton Keynes to watch the OU...
In the near half-century since then some 60 Open Universities or single-mode distance teaching universities (DTUs) have been established, with the largest number being found in Asia, followed by the regions of Europe and Africa. Latin America by contrast has very few DTUs, given its huge population, and some notable countries did not take up the model at all in the first phase, including Australia, France, Russia and the USA. There is, of course, much distance and online education in these countries, and in the last decade or so new online colleges and universities have been widely established, many of them for-profit, with a concentration on work-related programmes.

From the early days, there has been critical comment from within the Open University movement itself about the strength of the model and its sustainability for the future. Already by 1982, Keegan and Rumble (1982) in an early work on Open Universities around the world, asked questions such as “Will DTUs survive?” and “Are DTUs really necessary?” (p. 243). Later, in another volume on Open Universities, Mugridge (1997) posited that “The future of university education, particularly perhaps at a distance, lies not with the large Open Universities catering to massive numbers of students, but to extended networks of smaller institutions” (p. 169).

However, in the course of the 1980s and 1990s, Open Universities in some countries grew to enormous size, counting their students in the millions, notably India’s Indira Gandhi National Open University (IGNOU), China’s China Central Radio and TV University (CCTVU – now the Open University of China), and Turkey’s Anadolu University in its distance teaching faculty.

At this point, Daniel (1996) singled out a subgroup of large Open Universities, coining the term Mega universities to signify DTUs with more than 100,000 students. He noted competitive advantage as the core explanation for the rapid growth of these Mega universities, in addition to their cost advantage and their capacity to pioneer innovations in learning technologies. He also commented that competing higher education institutions had few strategies for teaching working adults or those who could not come to campus.

Starting with Daniel’s central notion of the competitive advantage of Open Universities and building on the further work of Tait (2008a), we can summarise the first-mover advantage for Open Universities in 1970-1990s as having various components:

(1) vision and mission: the courage to advocate and operationalise the move from an elite to a mass HE system, with notions of openness and access;

(2) innovation in learning and teaching: the admission of non-traditional student cohorts, usually people in employment or with family responsibilities, which demanded a new flexible student-centred practice;

(3) innovation in technologies for learning: initially, this was based on innovative developments in instructional design, combined with TV and radio, and today with online teaching, peer learning, OER’s, MOOCs and other online activities;

(4) innovation in educational logistics: the development of industrial-style management of services to students in large numbers, of high quality, and with an industrial-style focus on scheduling; and

(5) significant scale: breaking the mould of craft-based teaching to create university systems of hitherto unimagined scale.

Challenges for Open Universities

However, these first-mover advantages have now been substantially eroded. Other universities, both public and private, are adopting these practices as their own, enabled by
digital technologies along with a change in the culture of higher education for which Open Universities can fairly claim responsibility (Scott, 1995). In the recent period, at least four Open Universities in Europe have been threatened with closure or merger, either because of these competitive challenges and/or perceptions of their own poor performance. The narrative of paramount leadership by Open Universities for innovation, inclusion and social justice has begun to be challenged by a number of contemporary commentators, who in one way or another identify the spread of innovation elsewhere in the higher education sector as threatening for the place of Open Universities in that landscape. A summary of recent critical accounts is given below:

(1) Garrett (2016) reporting on the Open Universities of the Commonwealth in 2016 makes three core points. First, he identifies that about half of the distance teaching institutions that he has examined “have suffered recent enrolment decline or loss of market share, along with financial difficulty in some cases” (p. 41). In other words the forward march of as many as 50 per cent of Open Universities has been halted, which calls into question the sustainability of the institutional model in too many cases. Second, Garret points out the paucity of performance data, and that this may conceal poor student performance and in particular graduation rates. In the absence of data the challenge to quality of both supposed and real “drop out” impacts negatively on reputation and recruitment. Third, Garrett points to the challenges of distance and e-learning to provide adequate student support in particular for students who come from less advantaged backgrounds, socially and educationally, and who are the core target groups for Open Universities. Nonetheless Garrett concludes optimistically, perhaps more so than his own evidence supports, on the future role that Open Universities can play as higher education opportunity expands on a global basis. This is in significant part because competition in the form of online offerings of quality and at scale have not yet been widely delivered by other universities, a view not shared by Open University leaders as reported below.

(2) Paul (2016) alludes to a similar nexus of difficulties in his discussion of the challenges for “brand differentiation” for Open Universities today, faced with digital innovation in a wide range of other higher education institutions. He also notes the capacity for resistance to change in Open Universities, in particular as regards the realisation of the digital revolution for learning and teaching.

(3) In 2017, the Commonwealth of Learning published a report of headline data on the 27 Open Universities of the Commonwealth, and while avoiding any critical analysis permits itself to comment on a perceived gap in relating “missions of the universities to outcomes, and the undertaking of performance evaluation to record real achievements in terms of learner progress and success” (Commonwealth of Learning, 2017, p. 20). The gap between mission and delivery in the practice of 12 Open Universities had already been observed in detail, raising concern about the extent to which rhetoric had outrun achievements (Tait, 2013).

(4) Weller (2017) acknowledges the current challenges for the Open University UK, in particular as they derived from a high tuition fee policy in England from 2010, and then generalises his remarks more widely to argue that notwithstanding these challenges the strengths of a University dedicated to part-time and online learning outweigh the threats of universities for whom this will never be more than a marginal preoccupation. Organising his thoughts at a number of levels he makes two important further points. First, that Open Universities need to redefine “what constitutes an Open University”, and in particular introduce and support Open
Educational Practice; and second, in more detail use Open Educational Resources in its own learning and teaching strategy, rather than propose their use at a more general level.

This overview aims to provide a framework for discussion of this set of strategic challenges and opportunities for the next phases of development of Open Universities.

The views of Open University leaders

In order to provide a basis for discussion at the 2017 Toronto Roundtable of Open University Presidents, Rectors and Vice Chancellors, invitations were sent to all leaders of Open Universities or DTUs in the International Council for Open and Distance Education (ICDE) membership, asking them to provide information through interviews (see Appendices 1 and 2 for the questions and a list of participants). In the event 14 universities responded, and their replies are summarised below. While the limited size of the sample cannot make this summary representative, it does provide an insight into understanding by institutional leaders of current developments, opportunities and strategic challenges, and stimulates a number of questions. Information was collected under the following headings.

Context

Student number trends. There is no clear pattern but wide variety reflecting a range of national contexts. Where there is a continuing rise in numbers studying in Open Universities it is primarily, though not entirely, found in countries with expanding secondary school provision and buoyant repressed demand for higher education, such as India, Nigeria and South Africa. But there are also increases in Germany, Italy and Quebec. In recruiting students, Open Universities face challenges of demographics, notably a decline in the number of people seeking lifelong education at undergraduate degree level together with more intense competition. In Indonesia, the achievement of graduate status by most of the nation’s school teachers, who have made up a significant majority of Universitas Terbuka’s students, has caused a decline in student numbers and led the University to expand its range of programmes. The Open University UK has been hit hard by a change in government funding in England that has caused fees to rise very significantly and student numbers to decline sharply, by as much as one-third, over the last seven years. In another case an Open University was not highly regarded in its country, which constrained recruitment.

Age. There is wide variation but a dominant trend that the student age profile is getting younger, although not extending to school leavers in most cases. Exceptions include South Korea where the 25-39-year old cohort is in decline and numbers of older students are on the increase, and Italy where the over 50-year-old cohort is the largest.

Gender. It is widely though not universally true in this sample that proportions of female students equal or exceed those of men (e.g. up to 70 per cent women in the Korean National OU).

Previous education. There is broad variation in trends here, but with a widespread increase in the number of students of lower previous educational background enrolling at bachelor level. However, some Open Universities have a significant appeal to students who are already well qualified but wish to continue learning later in life.

University income. The proportion of Open Universities’ income coming from government grants varies widely. The most dramatic change has been the radical shift in policy in higher education in England, which has seen most government grant eliminated, to be replaced by tuition fees. This is the primary, although not the sole cause, of the marked decline in student numbers at the Open University UK referred to above.

Proportion of national higher education enrolment in Open Universities. Here again there are significant variations because Open Universities range so greatly in size.
Strategic directions

Opportunity. Within the institutional variety we can identify groupings. Some Open Universities have a close and privileged relationship with government that makes them able to provide national solutions for educational priorities. This provides stability and confidence. Other Open Universities see their major opportunities as continuing to be the dominant institution for part-time and lifelong learning. UNINETTUNO of Italy sees international recruitment and an internationalised curriculum as its major avenues for the future.

Challenges. Many Open Universities are experiencing severe competitive threat from other local universities or from foreign entrants who are taking advantage of new technologies to move quickly, sometimes more quickly than Open Universities can, into the online space, and to recruit adults already in employment to compensate for demographic downturns in school leavers. More than one Open University notes the damage done to the reputation of online learning by poor quality and inadequately regulated competition. One Open University has developed a campus-based operation which now enrols many students as its distance cohort.

Competition. A minority of Open Universities retain their assured position either because of lack of interest from other universities or because government protects their privileged position in offering distance and online learning. However, the majority report a severe level of competition that erodes the early status of Open Universities as the sole providers of opportunities for part-time home-based study and the main promoters of innovation at scale.

Innovation and technology

All respondents were committed to a vision for online study and digitally supported student administration, but they have travelled very different distances on that journey so far. Progress, however, is not necessarily a function of developing or developed country status. Some Open Universities make an explicit commitment to the development of mobile learning. Some have made progress with learning analytics while some aspire to do so. Privacy laws inhibit progress with learning analytics in a minority of countries. A minority of Open Universities have produced MOOCs. Only one Open University reported a major commitment to OERs for its own practice, and has evidence that OER use in course production reduces time and cost. A minority declared themselves to be already fully online providers or close to that goal. Several mentioned closing regional centres. The pedagogy of online learning was explicitly mentioned by only two respondents as being central to the research identity of the university. A networked system of international partnerships has been established by UNINETTUNO of Italy and represents a major element of its innovation. Rethinking curriculum for competency-based learning for adult learners in the workplace was a priority for one Open University. Resistance to change by academic staff and the need for professional development was an explicit concern of a minority, as was the need for improvement of digital skills in students.

National ICT infrastructure, assessment, access, student support

A range of Open Universities lobby governments in order to increase the number of Wi-Fi hotspots; create a national platform for e-learning; meet the needs of rural populations and prisoners; and reduce cost of broadband. One Open University had received earmarked government funding for its own ICT infrastructure.

In the area of assessment there are widespread developments, including the move to online examinations; an overall reduction of assessment; online marking and the digitalisation of scripts; more automated assessment and feedback. A minority acknowledge that change is slow, sometimes because of concerns expressed by academic staff.

Access, openness and flexibility remain a concern to the majority of Open Universities. Current reforms include restraint on increasing course fees; more flexible start times for
Completing the move to mass higher education

The UN SDGs provide a framework for future priorities. Unlike the earlier Millennium Development Goals, the SDGs explicitly embrace tertiary education, including university and lifelong learning, and the supply of teachers. They commit governments by 2030 “to ensure equal access for women and men to affordable and quality technical, vocational and tertiary education, including university” (UNESCO, 2016).

Such a significant ambition means, in effect, extending the move to mass higher education to middle income and poorer countries. The growth in numbers will be primarily in the continents of Asia, Africa and Latin America, rather than Europe and North America where participation rates in higher education already reach up to 85 per cent. Europe and North America, however, continue to have marked patterns of exclusion and disadvantage as well as wider challenges of economic and social development, and therefore also need further reform and innovation in higher education. Clearly, the challenge to Open Universities in Europe and North America for the next phase of development will be different from that in Asia, Latin America and Africa, where prima facie the need for new and large scale innovative institutions such as Open Universities remains central.

In addition to growth in the number of places in the tertiary sector, the UN SDGs also propose quality as a priority, as well as equipping students with knowledge and understanding of the concept and practice of sustainability. Quality represents a multi-faceted and contested range of issues, with both objective and subjective dimensions. The reputation of some Open Universities is acknowledged in some places to be weak, for both objective and subjective reasons. Quality in universities that define excellence by exclusion – the large numbers of applicants for a limited number of places – dominate in in professional and public “commonsense” definitions of what quality is. However, for Open Universities and other higher education institutions that seek to include participants from non-traditional groups whether defined by socio-economic class, ethnicity, rurally, gender or some combination of these, a definition of quality lies in the balance of risk taken in admission with outcomes of student success. However by definition when these factors are combined with part-time rather than full-time study, with students in the workplace and often having family responsibilities, student failure is not going to be limited to 1 or 2 per cent as it can be in elite universities. Open Universities could make a major contribution to both quality concepts and quality outcomes in mass higher education by addressing the issue in the context of the SDGs for 2030. This demands advocacy in public and governmental spheres in order to claim and demonstrate a significant share of the public discourse in how quality is conceived and rewarded.

Equally, with such a large proportion of Open University students already in the workplace, Open Universities are in a strong position to offer leadership in re-engineering curricula across all subject areas to develop a workforce and a citizenry knowledgeable about the principles and practice of sustainability. Innovation in curriculum is not in general the strongest element of innovation in an Open University profile, which has centred on mission and technologies for learning and teaching. The Open University UK, however, in
its first 25 years attempted to acknowledge the inter-disciplinary nature of knowledge, in recognition of the “real world” experience of its adult learners, and went so far as to introduce a range of topic-based multi-disciplinary courses which did not start from disciplinary bases at all, known as University or “U” courses, such as “Risk” and “Enquiry”. Increased competition, however, during the period 2000-2010 saw retreat to more conventional degree profiles such as those found at other universities, and the advent of cost centre budgeting has made collaborative work across faculty boundaries less attractive for faculty leaders. However, with the issue of sustainability placed at the heart of humanity’s concern by the UN and most governments world-wide, it is possible to argue that no qualification should fail to educate its graduates on the theme. This goes much further than the introduction of a limited number of modules or qualifications in the field of environmental science, to a vision that includes sustainability in all qualifications, whether in science and technology, social science, business and management, or indeed the humanities.

While the challenges for poor, middle-income and richer countries are clearly different, contributing to social and economic development at scale through educational interventions of an innovative nature is a task with significant common elements for which co-operation and collaboration amongst Open Universities at the global level would be invaluable. Tait (2013) proposed a framework of development concepts for Open University activity using Sen’s capability approach, which is relevant for this discussion. In particular it is asserted that market analysis driven recruitment while necessary is on its own inadequate for Open University missions that are driven by concepts of development or social justice, as so many of their mission statements declare. Market response has to be accompanied by identification of those who do not participate in higher education for historic reasons associated with socio-economic status, gender, rurality and disability, and recruitment, fee levels, and student support strategies need to be tailored accordingly.

Innovation for survival

As well as the potential to grow the domestic capacity of higher education through Open Universities, the expanded number of places will also be provided in part by student mobility to other countries; increased participation from foreign universities developing local campus and online operations; and renewed competition from local universities offering blended and more flexible patterns of study. Are Open Universities in the strongest position to contribute substantially to the SDG goals, in terms of both scale and quality? And has their achievement of the last 50 years led governments around the world to see them as continuing to be vital drivers of innovation in higher education at scale?

This takes us to the concluding section of discussion: the centrality of innovation to the identity and resilience of the Open University model. A recent report in Innovation in Online Learning has 27 case studies of which four only are from Open Universities, suggesting that innovation in this field is seen as lying primarily outside that sub sector (Contact North, 2017a). A further report on innovation specifically in the “World’s Open Universities” lists 27 such innovation on topics such as learning design, mobile learning vans, student support, learner authentication for assessment, on demand examinations and library services (Contact North, 2017b). While this list is not exhaustive it is suggested here that these innovations, valuable though they may be in a specific country, are no more than marginal to the core character of Open Universities, and in some cases do not represent innovation on an international scale at all. One innovation only deals with Open Education which as a cluster of streams of activities does represent major opportunities to revisit and revise the Open University model.

So do Open Universities risk becoming the equivalent of the mainframe computer companies that did not notice or prepare for the arrival of personal computers, and who disappeared? Marginal innovation as reported on above is not, it is argued here, going to
provide Open Universities with what they need to validate their identity for the next period of say 15 or so years, and in particular to fulfil the SDG’s. Rather what is needed is a substantive new proposition that once again combines vision and mission with new technology assemblages and combinations, which was essentially the brilliance of the early Open University model. Other universities then did not have a contemporary vision of who could and should study in a university, and indeed many actively opposed such a vision, and neither did they see in the recombination of existing broadcast and multimedia with pedagogies the possibilities for rethinking learning and teaching. We have seen enough of the potential for the restructuring of industries through the digital revolution to know that there is no guaranteed place for Open Universities in the landscape of higher education: it will have to be earned once again.

It is not possible for this paper to specify what the new innovative breakthroughs could or should be for Open Universities in all their variety in so many different countries and societies. It is possible, however, to suggest the most likely areas in which innovation breakthroughs may once again be created. They all exist already, as did cameras and mobile phones separately when they were first combined by Samsung in 2000 (Digital Trends, 2013):

1. The rethinking of the concept of Open Education, of which there are many current constituent parts in rapid development, including Open Educational Resources and Open Education Practice, MOOCs, badging as opposed to formal qualifications, and their continuing incorporation into Open University practice (see Weller, 2017).

2. Informal learning, to align and complement the extraordinary amount of informal learning taking place through interrogation of digital resources by adults and children outside educational institutions. This may also lead to curriculum innovation which is more co-operatively developed and learner led.

3. A further rethink of what sort of qualification new cohorts of learners want and need. The continuing near total dominance of the bachelors, masters and PhD structures risk being too inflexible and lengthy for many part-time adult learners.

Some combination of these and no doubt other ideas may be the elements for recombining into a revolutionary and compelling offer such as was pioneered by Open Universities from 1970s to 1990s. However, it is not possible or appropriate to prescribe what the core elements of innovation are, but more fruitful to argue that reimagining the Open University model is necessary, and to conclude with some comments on how the environment for such innovation can be created.

I owe to a former colleague at the Open University UK, Professor David Vincent, the term “founding father syndrome”: the set of attitudes held by colleagues who are trapped emotionally and intellectually in the early institutional model and are unable or unwilling to consider the need for its revision, and to imagine new avenues for development personal communication. Resisting this syndrome has been observed to be challenging in a number of Open Universities around the world.

The familiar ways in which institutions have resisted the domination of such reactionary and conservative attitudes have included:

1. appointment of outsiders in leadership positions for the senior team, as well as the professional and academic cohorts;
2. exposure of Open University staff to a range of external environments; and
3. strategic management activities such as scenario planning, which are intended to support the imagination of a range of futures.

All of these have something to contribute, though none guarantee success. The particularly hard balance to achieve is to maintain deep knowledge of the field of Open Universities and
open and online education with the integration of innovations from elsewhere. Open Universities have a tendency because they are unusual and indeed often unique in their own countries to become a world in themselves and to overlook what is happening outside their own environments. The speed of innovation in digitally supported learning and teaching in a range of other institutions makes that a singularly serious vulnerability today.

Leadership development

Finally, these issues create a pressing agenda for leadership development in Open Universities. In some countries leadership is provided through political appointment rather than ability, and the record is in a number of places poor. In other countries Open Universities are not seen as high status or prestige institutions and do not attract the best candidates. In some societies institutional leaders are always appointed from within, and by election. In others leaders are almost always appointed externally and by open selection of the external field. There have been effective and ineffective institutional leaders using any of these processes for it to be impossible to say that one approach trumps all. However, the need to deliver radical indeed revolutionary change for Open Universities today demands institutional leaders of the highest calibre.

Over and above appointment of leaders of the best quality the need for leadership development at all levels in the organisation is pressing, across academic and professional cohorts. Paul (1990) identified amongst a range of factors for successful leadership in this field the need to be open to learning and to seek to create a learning organisation, and this is no less true now than at the time of writing. A transformational style of leadership is identified by Tait (2008b), who argues that the following capacities are essential:

- an openness to the contested values of both society and the contribution that post-secondary and higher education makes to it domestically and globally;
- the imagination of educational opportunity as being other than it is now, in the face of established political, social and professional interests;
- the invention and management of learning and teaching systems that are radically different in the ways in which they use academic labour to provide programmes of study at scale and quality; and
- the competence to integrate complex systems developed with a division of labour that can be industrial in nature (p. 505).

A more recent source also identifies a crucial competence for institutional leaders in this field to be that of “the ability to create conditions for innovation via a transformative leadership style” (Beaudoin, 2015, p. 41). There is therefore longstanding commentary to the effect that leadership development for this field has been less attended to than optimally it could have been, and to suggest outlines as to what it should be. At the same time a number of key professional associations all have a record of contribution to leadership development in this field, including the ICDE, the Asian Association of Open Universities and the European Association of Distance Teaching Universities. To conclude, however, in order to ensure the continued contribution that Open Universities present and future can surely make to the SDGs to which our governments have committed it is necessary to reemphasise and restate the importance of leadership development, relevant priorities arising from this research might include.

Leadership for:

- challenging policy environments;
- quality and reputation;
- institutional change and the digital revolution; and
- sustainability across the institution.
References


Appendix 1. Questions for interviews with Open University leaders

Context:

(1) How many students are currently enrolled and how are these numbers changing?

(2) How is the profile (age, gender, previous education, etc.) of your student body evolving?

(3) How does the income of your University break down between government grants and student fees?
(4) What proportion of the total higher education enrolments in the country are accounted for by your University?

Strategic directions:
(1) What is the most important opportunity facing your University?
(2) What is the most important challenge facing your University?
(3) How is the competitive environment of higher education in the country changing?

Innovations
Specific questions:
(1) What is your University’s most successful recent innovation or development?
(2) How is your University taking advantage of developments in technology?
(3) What new delivery tools and resources for learning are your university using?
   • What improvements would you like to see in the country’s technological infrastructure?
   • Is technology changing the ways you assess students? Which new models of assessment is your university using?
(4) What specific steps are you taking to expand access, openness and flexibility at your university?
(5) How is your approach to student support evolving?

Appendix 2. List of Open Universities interviewed or which replied in writing
(1) B.R. Ambedkar Open University, India (Prof. Seetharama Rao, Vice-Chancellor).
(2) FernUniversität, NRW, Germany (Prof. Ada Pellert, Rector).
(3) Korea National Open University (Dr Byung-Ki Moon, Dean).
(4) Open Polytechnic of New Zealand (Dr Caroline Seelig, Chief Executive).
(5) Open University of Hong Kong (Dr K.C. Li, Director of Research).
(6) Open University of Israel (Prof. Sarah Guri-Rosenblit, Dean).
(7) Open University of Japan (Prof. Tatsuhiko Ikeda, Rector).
(8) Open Universiteit, the Netherlands (Prof. Anja Oskamp, Rector).
(9) Open University UK (Guy Mallinson, Director Strategy).
(10) Universiteit TELUQ, Quebec, Canada (Dr Noel Martin, Director-General).
(11) Università Telematica Internazionale UNINETTUNO, Italy (Prof. Maria Amato Garito, Rector).
(12) Universitas Terbukas, Indonesia (Prof. Tian Belavati, Rector).
(13) University of South Africa (UNISA) (Prof. Mandla Makhanya, Vice-Chancellor).
(14) Wawasan Open University, Malaysia (Prof. Ho Sinn Chye, Vice-Chancellor).

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Abstract

Purpose – Higher education should bring up the multifaceted development of human resources by promoting the knowledge-enabled population that will bring socio-economic mobility, peace and progress in society. Thus, the educational providers must undertake the duty to impart need-based higher education that makes people educated with a progressive, rational, analytical, and skilful mind. Hence, there is an urgent need to address some basic challenges of higher education such as required educational avenues or institutional set up against the demand of the population, achievements in global learning, providing room for equal access to learning, research on cost benefit analysis, educational innovations and partnership, use of educational technology, quality assurance mechanism, need for adequate funds for the expansion of higher education, and so on. Once these challenges are addressed, transformation of the society can be a reality, and Open and Distance Learning (ODL) system is one of the most viable ways for transforming a country like India. The paper aims to discuss these issues.

Design/methodology/approach – For this study, descriptive research methodology has been used, and analysis has been done based on the data extracted from the secondary sources of information such as Census of India 2011; India Human Development Report 2011; Human Development Report 2014, 2015; Economic Survey 2015-2016; NFHS-I, II, III and IV; Report of 11th Five Years Plan; 12th FYP; Annual Report 2015-16, MHRD; Annual Report of NSS, 2016, etc.

Findings – ODL can be raised as an alternative way for making education accessible and for providing scope for skill-based education at a minimum cost. In fact, ODL, in particular, can play a significant role in transforming and empowering the vibrant adult population of a country like India into productive human resources by providing need-based training and equipping them with need-based skills, which are necessary for maintaining a decent standard of living.

Social implications – Through this paper, it could be realised how ODL provides the opportunity of education to a large section of people in the society irrespective of sex and age, and how ODL has made the people capable with basic and essential skills which are necessary for maintaining a decent standard of living.

Originality/value – ODL could be a most viable option to mobilize the higher education system in India. This paper helps to contextualise ODL in empowering and transforming society, and the findings, and discussions have been made with reference to the various initiatives taken in the field of skill-based education through ODL in a country like India.

Keywords Higher education, Empowerment, Transformation, ODL

Paper type Research paper

1. Introduction

It is a generally accepted belief that education contributes to the formation of human beings as productive citizens, besides bringing meaningful changes in their lives. Education is, therefore, also considered as the bedrock of the socio-economic, cultural and political uplift of a society or a country. Education is necessary because it acquaints people with the need-based skills, knowledge and information in their respective fields. Education strengthens the capabilities of the people and helps to bring them up as the knowledge population.
Providing opportunities of education to the people also means that a country is able to protect them against all sorts of discriminations, provide them with the required opportunities, and make them empowered in every aspects of life in the true sense. In the context of the rich demographic dividend in present day India, higher education can be seen as the only way to ensure the targeted economic growth, human mobility and development. After the Economic Liberalisation in 1991, various laws, policies and actions under the means of social and human security have been implemented for ensuring welfare to all. Therefore, to make higher education easily accessible, different educational avenues are being created, as the institutions of higher education in a country are considered the think tanks for development and socio-economic mobilisation, which eventually play a central role in bringing welfare to the people of the country.

However, in a country like India, the irony is that the number of degree takers and degree holders from a college or a university is very few compared to the total population living in India. Besides GER, the need of required higher education avenues or institutional set up against the demand of the population, achievements in global learning, equal access to learning, justice of cost-benefit analysis, research and innovations, use of educational technology, issues related to quality management, mobilising adequate funds for the expansion of higher education etc. are some of the basic challenges the country is currently facing while trying to produce the knowledge-enabled population. Subsequently, the higher educational providers are made to play a prominent role to impart need-based education that would make the people truly educated with a progressive, rational, analytical, and skilful mind. This paper seeks to discuss how the ODL institutions in India should play an important role in bringing up the required human resource development both by promoting the knowledge-based and skill-based education and by protecting them against all antisocial activities that would actually help in empowering and transforming the society.

2. Objectives of the paper
In this paper, an attempt has been made to:

- discuss the significance of higher education in the context of India;
- highlight the various challenges faced by the system of higher education in a country like India; and
- explicate the various strategies for transforming and empowering higher education through the ODL mode of education in India.

3. Methodology or data source
While writing this paper, descriptive research methodology has been used, and analysis has been done on the basis of the data extracted from the secondary source of information. The secondary sources include Report of Census 2011; India Human Development Report 2011; Human Development Report 2016; Economic Survey 2015-2016; AISHE 2016; Annual Report 2016-17, Ministry of Statistics and Programme Implementations; Report of 12th Five Years Plan; Annual Report 2015-16, MHRD; Annual Report 2016, NSS, etc.:

- From the Report of Census 2011, the details about the population strength of India, percentage of adult literacy rate in terms of sex and place of residence have been taken.
- The data used to check the rank of countries in the world in terms of Human Development Index (HDI) and unemployment rate, are from the Human Development Report, 2016, UNDP.
For the details of public expenditure in higher education in India, data have been taken from the Economic Survey 2015-2016, Ministry of Finance, Govt. of India.

For knowing about the skill-enabled population in India and abroad like Korea, data have been extracted from the Report of 12 Five Years Plan.

Annual Report 2015-2016, MHRD has provided the data related to the avenues and educational institutions in India, the enrolment trend of male and female population, Gross Enrolment Ratio (GER) in higher education, the enrolment of SCs and STs, etc. This report has also helped to make a comparative analysis across the states and regions in this country. AISHE, 2016 has provided the required information related to the percentage of colleges to run PhD and post-graduate programmes in India.

The Annual Report 2016 of NSS has shown the number of male and female learners pursuing general and technical/professional courses in India. Besides, with the help of this Report, the work force participation rate of male and female is also sought to be depicted.

With the help of the Annual Report 2016-2017, Ministry of Statistics and Programmes Implementations, the adult literacy rate, and differences between urban and rural areas in terms of adult literacy have been drawn in this paper.

4. Higher education: need of the hour
The most significant contribution of Higher education is to disseminate the much-needed knowledge and information to the learners, raise their functional skills, and make them efficient for living at present as well as in future. As the main objective of education is to promote the well-being of the people in a country, the higher education providers should try to increase the capacity of the people by enhancing their skills in various sectors like the sciences, medicines, engineering, management, agriculture, including the other vocational sectors.

It is through higher education that the skilled persons can contribute towards the positive transformation of a society. Thus, at the higher stage, education can boost the human resources and significantly improve their socio-economic conditions. In the following, we shall try to discuss the need of higher education in the context of a country like India.

4.1 Demographic dividend
India has a rich demographic dividend, because the country has 54 per cent of population below the age of 25, and 66 per cent people under the age of 35 (Census of India, 2011). It means that the young population, the number of school-going persons within that age group, and the level of work force within that group, are considered assets for the entire country. If proper skill-based education could be given to this population, they could contribute immensely to the enhancement of the positive social transformation. Therefore, it is the right time to provide skill-based learning opportunity to all, and make them productive citizens in a futuristic educational environment. In this context, I am reminded of the convocation lecture that Dr. A.P.J. Abdul Kalam, delivered in Jiwaji University, Guwahati on 10 August 2004, where he stated:

India has a population of one billion people. Out of this one billion, 540 million people are below the age of 25 years, which is our national strength. We have natural resources. In addition, we have a roadmap for transforming India into a developed nation by the year 2020. Ignited minds of 540 million youth will definitely transform India into a developed country by the year 2020.

Therefore, in today’s contexts, keeping this demographic dividend as the priority, higher education in India should not be only confined to an individual’s physical, mental,
intellectual, and spiritual developments, it should strive for equipping him/her with necessary skills for their own wellbeing as well as for the well-being of the country in which he/she lives.

4.2 The challenge of producing human capital

Human capital plays an important role in the development of a nation. It is the quality of the human beings of a country, which helps in accelerating the pace of development. However, the fact is that human capital can be ensured through proper education only. Educated people are generally more productive workers because they can use the capital more effectively, can adopt new technologies, and learn from previous mistakes. Thus, the concept of human capital is linked with the growth and development of a nation, and education should play an important role in producing the human capital for both the present and the future developments.

4.3 Inclusive growth

The notion of inclusive growth encompasses equality – equality of opportunity in accessing education, in accessing health services, in accessing protection in market and employment transitions and so on. Thus, the Indian Government has set a definite target to ensure equality of opportunity in terms of access in the economic field, in the educational field, in social and cultural norms, in health sector, in the unbiased regulatory environment for business and individuals and so on. Therefore, in order to ensure the inclusive growth, there is the demand of establishing access, equality, quality, and expansion of higher education so that each citizen of the country can lead a meaningful life or is at least able to ensure a decent standard of living.

4.4 Demands for sustainable development goals

On 25 September 2015, the heads of state and central government, and high-level representatives from various countries met at the UN Headquarters in New York and approved the document titled “Transforming Our World: The 2030 Agenda for Sustainable Development adopting a new set of global Sustainable Development Goals”, which is hoped to transform the world in the next 15 years. There are 17 goals to be achieved by 2030 for sustainable development. Goal 4 targets to achieve the inclusive and equitable quality education, and to promote life-long learning opportunities for all. Another objective of the Goal is to focus on the acquisition of foundational and higher order skills, greater and more equitable access to higher, technical, and vocational education and training. In this Goal, as has been reported, until 2013, there were about 757 million adults (aged 15 and above) unable to read and write, and out of them, two thirds were women. This data also shows the urgent need for imparting education to millions of people living in this world.

5. Challenges of higher education in India

It has been mentioned that in a country like India, higher education is necessary for providing a decent standard of living to the people and mobilising their capacity for sustainable development. In fact, sustainable education is directly linked with human resource development that can ensure socio-economic, political and cultural development of the nation. Besides, for the growth of the national income in near future, India needs to be transformed into a major knowledge economy having adequate and abundance of skilled and trained manpower. In this regard, nobody can deny the fact that skill-based higher education is a prerequisite for a developing country. However, higher education in general should be linked with some larger aspects like providing access, equity and employability, deriving long-term benefits from learnt skills, developing life skills and soft skills, ensuring

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a knowledge and technology-enabled population and so on, so that human resource
development becomes a reality.

In India, at present, there are 758 universities, 39071 colleges, and 11922 stand-alone
institutions. Out of 757 universities, 267 are privately managed, 43 are central universities,
1 is central and 14 are state open universities, 69 are institutes of national importance,
316 are state public universities, 5 are institutes under State Legislature Act, 37 are deemed
universities, and six are others universities. (Educational Statistics at a Glance 2016 and
AISHE, 2016). However, despite this large number of Universities and colleges, access to
higher education to every citizen of this country for ensuring the knowledge-based learning
is yet to be harnessed. The following are some important observations in this regard:

- Regarding the total enrolment in higher education, only 54 per cent male are able to
  enroll, on the other hand, the female hover around 46 per cent (AISHE, 2016).
- The GER in Higher education in India is 24.5 per cent, which is calculated for the
  18-23 age group, whereas in the developed countries like Germany and USA, it is
  more than 90 per cent. The GER for male population in India is 25.4 per cent, and for
  female, it is 23.5 per cent. For the Scheduled Castes, it is 19.9 per cent, in which male
  occupies 20.8 per cent, and the female 19.0 per cent. For the Scheduled Tribes, it is
  14.2 per cent (male 15.6 and female 12.9 per cent), which is very poor compared
to the national average. An Indian state like Assam has comparatively poor GER
(16.8 per cent) compared to other North Eastern States like Manipur (38.5 per cent),
Sikkim (29.4 per cent) etc. (MHRD Report 2016). Besides, it has been observed that the
percentage of the female GER is lower compared to that of the male in India and other
states of the North East India except in Meghalaya and Sikkim. This reveals that the
overall inclusion of girls and women in higher education is poor compared to boys
and men (Table I).
- Out of 39071 colleges, only 1.7 per cent colleges run PhD programme, and 33 per cent
colleges run postgraduate level programmes. (AISHE, 2016).
- More and more students are enrolled in general courses rather than in professional,
technical and vocational. At the undergraduate level, more students are enrolled in
arts/humanities/social sciences courses, which are about 40 per cent, followed by
engineering and technology (16 per cent), science (15 per cent), and commerce
(14 per cent) (AISHE, 2016).
- It is also observed that most of the women learners are enrolled in general and
medicine courses rather than in engineering, professional, vocational and IT courses.
The following table shows the trend of enrolment of male and female learners in
different subjects (Table II).
- In the context of research, only 0.34 per cent students are enrolled in the PhD
programmes (AISHE, 2016).
- At the all-India level, the adult (15+years) literacy rate is 69.3 per cent. Among the
  male, it is 78.8 per cent, and female 59.3 per cent. The rural-urban gap has existed in

<table>
<thead>
<tr>
<th>Table I. Gross Enrolment Ratio (18-23 age group) in higher education (in percentage)</th>
<th>Total (India)</th>
<th>SC</th>
<th>ST</th>
</tr>
</thead>
<tbody>
<tr>
<td>GER</td>
<td>24.5</td>
<td>19.9</td>
<td>14.2</td>
</tr>
<tr>
<td>Male</td>
<td>25.4</td>
<td>20.8</td>
<td>15.6</td>
</tr>
<tr>
<td>Female</td>
<td>23.5</td>
<td>19.0</td>
<td>12.9</td>
</tr>
</tbody>
</table>

Source: MHRD (2016)
adult literacy rate for both male and female. The adult literacy rate for the female in rural areas is 50.6 per cent vis-à-vis 76.9 per cent in urban areas, whereas for the male, the same in rural areas is 74.1 per cent vis-à-vis 88.3 per cent in urban areas (Annual Report, 2016-2017, Government of India, Ministry of Statistics and Programme Implementation). The following table has depicted the real picture of adult literacy, although the adult population is considered an asset for this country (Table III).

- If higher education is related to human resource development, and if it makes people productive citizen, it has been seen that the Workforce Participation Rate at all India is 25.51 per cent for female, and 53.26 per cent for male. While there is no rural–urban gap for the male (53 per cent), there is considerable rural urban gap for the female (rural 30 per cent, urban 15.4 per cent). (Census, 2011). These figures prove that there is a lack of adequate skills among these people, mostly among the adult learners, for getting their required livelihood opportunities. Besides, it also proves that women have comparatively lower skilled learning than men, particularly in the urban areas. Therefore, it is a big challenge for the women population in the urban areas in getting their adequate livelihood, although they are highly educated in terms of degrees and diplomas.

Therefore, in order to lead this young and vibrant group of people in the right direction by raising their knowledge, skills and attitude, need-based higher education is an absolute necessity for a country like India.

However, providing education to all has been one of the greatest challenges in India because of important but unsolved reasons like lower level of GER, lower level of adult literacy, regional and gender disparities in terms of accessing higher education and so on. If higher education providers are considering skill-based education, the fact is that only 5 per cent of the population belonging to the 19-24 age group, has acquired some skills.

<table>
<thead>
<tr>
<th>Course</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities</td>
<td>49.9</td>
<td>50.01</td>
</tr>
<tr>
<td>Science</td>
<td>59.5</td>
<td>40.5</td>
</tr>
<tr>
<td>Commerce</td>
<td>56.8</td>
<td>43.4</td>
</tr>
<tr>
<td><strong>Technical/professional</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>35.3</td>
<td>64.7</td>
</tr>
<tr>
<td>Engineering</td>
<td>75.2</td>
<td>24.8</td>
</tr>
<tr>
<td>Law</td>
<td>63.9</td>
<td>36.2</td>
</tr>
<tr>
<td>Management</td>
<td>62.3</td>
<td>37.7</td>
</tr>
<tr>
<td>IT/computer courses</td>
<td>61.1</td>
<td>38.9</td>
</tr>
<tr>
<td>ITI/recognised vocational</td>
<td>82.8</td>
<td>17.2</td>
</tr>
<tr>
<td>Others</td>
<td>51.1</td>
<td>48.9</td>
</tr>
</tbody>
</table>

**Source:** NSS 71st Round (2014-2015)

<table>
<thead>
<tr>
<th>Residence</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>74.1</td>
<td>50.6</td>
<td>62.6</td>
</tr>
<tr>
<td>Urban</td>
<td>88.3</td>
<td>76.9</td>
<td>82.8</td>
</tr>
<tr>
<td>India</td>
<td>78.8</td>
<td>59.3</td>
<td>69.3</td>
</tr>
</tbody>
</table>

**Source:** NSS 71st Round (2014-2015)
through vocational education, when the corresponding figure for a country like Korea is as high as 96 per cent. (Twelfth five Year Plan, 2012-17 on Social Sectors, Vol. 3). Regarding finance in higher education, the cost of public expenditure is only 1.12 per cent of the GDP, which is very poor compared to many developing countries in the world, for example in Thailand, it is more than 4 per cent (Economic Survey 2015-2016).

Therefore, democratisation of education is an absolute necessity so that everyone can get equal opportunity in education without any bias and differentiation. Although, India has a rich demographic dividend, in terms of HDI, it ranks 131st out of 188 countries on the United Nations Development Programme’s new Human Development ranking for 2015. This puts India in the “medium human development” category of countries as compared to Sri Lanka (73rd) and China (90th) which are “high human development” countries. Again, in terms of unemployment rate, Bangladesh is in the 90th position whereas India’s rank is 46th among the developing countries in the world (Human Development Report 2016, UNDP). Thus, this situation has posed a big challenge in front of India in terms of making its people empowered in the true sense.

6. Role of Open And Distance Learning (ODL) in transforming and empowering the society

ODL can be raised as an alternative way for creating and making education as accessible as possible and for providing the scope to get skill-based education at a minimum cost. However, the reasons behind the emergence of open universities and ODL institutions are manifold. Some of these reasons are population over-growth, economic liberalisation and globalisation, popularity of global-lifelong learning as well as blended learning, quick expansion of multimedia technology, inclusive growth, need of manpower planning for creating knowledge enabled population and so on. With these facts, along with a National Open University, the state open universities have emerged in India for catering to the needs and demands of the people of the respective states in which they are established. The common motto of the ODL institutions and universities is to bring the positive social transformation in society, and to make the people empowered economically, socially, culturally, and educationally. However, for proliferating the benefits of education, there is an urgent need to reduce the disparities present in the Indian education system, and make education accessible in the real sense, so that everyone irrespective of caste, class, religion, sex, place, occupation, etc. can avail the benefits of education.

Thus, we need an alternative institutional set-up besides the conventional system of education, because it can reduce the disparity in terms of access to education in general and higher education in particular. ODL is a mode through which the system of Higher Education can be transformed and empowered in an unprecedented way. ODL can provide justice to millions of people in achieving the motto of higher education (access, equity, quality, innovation and research). Finally, ODL can lead to the development of the capabilities of the people and make them productive and empowered citizens. In fact, higher education should build up the capacity of the people by disseminating knowledge and information, and making them competent with the required and essential skills that will finally lead to a productive and empowered group of citizens in the society. Thus, it will lead to the positive social and economic transformation in the society. In the following sections, we shall try to look at ODL in a more engaging way.

6.1 ODL and its relevance

The primary objective of the ODL is to provide knowledge and skills to those who did not have access to learning. The basic purpose of the open universities is to provide instruction to the learners at their doorsteps through various media and technology (UNESCO, 2002).
The basic motto of ODL is to establish equity in the education system through various modes of education (both the correspondence and on-line learning). This system provides great opportunity to those learners who are denied access to education in traditional institutions due to various factors such as poor economic condition of the family, parents’ illiteracy, staying away from home for income generation etc. and to those who require updating their knowledge and skills through education. The mode of ODL is also called as “Independent Learning”, “Flexible Learning” as well as “Self-Learning”. It can help to empower the learners by enabling them to take charge of their own learning and enabling them in having greater control and ownership on their own learning at a minimal cost. Therefore, this system of learning can be called as “fed by own” not “fed by others”. Besides, in terms of flexibility, the Open University has the autonomy to adapt different approaches for the development of course materials as well as learner’s support services. The utilisation of on-line learning in distance and open learning makes it in a true sense open or global learning.

The National Knowledge Commission (NKC) purposefully stated that, “Open and distance education enabled and delivered through information and communication technology (ICT) holds the promise to address the questions of access, and provide new, alternative forms of capacity building.” (NKC, 2009, page 4) Considering the wide scope of the ODL system in providing flexible access to higher education general, professional and vocational, since 1980s, the central and state governments of India have given due emphasis, on the expansion of quality higher education through the ODL mode. This has resulted in the establishment of one National Open University (IGNOU), 14 state open universities, and more than 112 Directorate of Distance Education attached to conventional Universities spread across India. In fact, ODL accounts for about 12 per cent of the total enrolment in the segment of higher education, and has contributed substantially towards the rise of the GER of India, which is 24.5 per cent. The most significant contribution of ODL in higher education is that it provides the wider opportunity to the female learners for educating themselves and having a dignified life in the society. For instance, the women enrolment in higher education through distance mode is 46.03 per cent whereas in regular mode, women share is 45 per cent only (AISHE, 2015-2016).

Again, if we make an analysis of the enrollment trend in different ODL institutions across India, we find that the number has grown at a very fast rate, as we can surmise from Table IV.

The trend of enrolment in distance education is graphically represented below in Figure 1, where it is found that the trend of enrolment in distance education is able to motivate the learners and provide them with the scope to access higher education at anytime, anywhere and for anyone.

As stated above, the fast growing enrolment trend in ODL has provided unprecedented scope to bring education to the doorstep of the unreached, which is one of the most

<table>
<thead>
<tr>
<th>Year</th>
<th>Total enrolment in DE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983-1984</td>
<td>6,231</td>
</tr>
<tr>
<td>1988-1989</td>
<td>62,923</td>
</tr>
<tr>
<td>1993-1994</td>
<td>170,372</td>
</tr>
<tr>
<td>1998-1999</td>
<td>341,444</td>
</tr>
<tr>
<td>2003-2004</td>
<td>750,342</td>
</tr>
<tr>
<td>2008-2009</td>
<td>1,472,379</td>
</tr>
<tr>
<td>2013-2014</td>
<td>2,104,291</td>
</tr>
<tr>
<td>2014-2015</td>
<td>3,811,723</td>
</tr>
</tbody>
</table>

Source: Distance Education Bureau, UGC

Table IV. Trend of enrolment at Indian open universities
important philosophical aspects of ODL in general. Moreover, the emergence of Online Learning and E-Learning systems have enhanced the functionality of ODL not only by providing various educational opportunities to those hitherto been deprived of education, but also by inviting thousands of fresh learners towards this mode by inculcating the philosophy of life-long learning.

In this regard, the NKC, 2006 rightly stated that the appropriate application of knowledge in an area like agriculture can play a major role in boosting the agrarian economy and giving the Indian farming a competitive edge in the global market, and ODL institutes can play the pioneering role.

Thus, the ODL mode of education, because of its flexibility and low cost, has the potential to create the knowledge-movement in every aspect of human life in society, which can lead to sustainable as well as dignified living among the concerned stakeholders, and which can further transform and mould the society in the intended direction.

6.2 Initiatives to be taken by the ODL institutions

For ensuring mobilisation and transformation in society, various initiatives can be undertaken by the ODL institutions. As the vision and mission of a university or an educational institution are focussed on the needs of the locality and on fulfilling the needs and desire of the stakeholders, the university authorities should ensure some special contributions to the society and the country, besides trying to maintain the status and reputation of the university in the competitive age. In this regards, due to the nature of flexibility and its openness, Open Universities and ODL institutions play the role of people’s university by harnessing the needs and demands of the common masses. This means that the education received even from a open university should gear up the living standard of the people so that they can lead a dignified life. Nobody can deny the possibility and prospects of sustainable education that would ameliorate the living standard of the people at present and near future. Skill-based education could bring viability to the institutions as well as to the people in terms of ensuring their sustainability and generating employment opportunities in the present world. Therefore, an open university or an ODL institution should develop need-based and skill-based courses, which have the direct link with industrial and vocational recruitments.
Again, in order to maintain academic reputation, an open university should design such courses that would bring special credit and recognition to the university itself. Before launching the course, the faculty members of the university should be sent to field works, or to different exchange programmes for understanding the validity, reliability, and authenticity of the courses in a practical way. Once they return with some experience, the university should assign on them the duty to prepare the course content and subsequently launch the programme. This process can help the university to identify the shortage and paucity of manpower in the society in various fields, and then, supply future manpower by launching the need-based courses. Besides, the content of the syllabus must be up-to-date, regularly monitored, and revised by an internal or external Quality Assurance Unit. Again, there should be some provisions in the university to become self-sustaining by generating its own revenues or by generating its own income through student's fees, own agriculture and farming products and so on. However, some other important initiatives can be taken to successfully run an educational institution particularly through the ODL mode. These are as the following:

1. Use of ICT in the ODL institutions: in the present technology-based era, each higher educational institution, most specifically the open universities and ODL institutions, should be comfortable with the use of technology, and the teachers should design various academic and ICT-based modules for the benefit of the learners in a wider context. The application of National Knowledge Network (NKN), National Programme on Technology Enhanced Learning (NPTEL), National Mission for Education through Information and Communication Technology, SIRD linked with Satellite hub for with Satellite Interactive Terminal (SIT), are some of the online programmes, which can bring in a marked difference in the functioning of the educational institutes of this country with an objective to bring together all the stakeholders in the field of science and technology, higher education, research and development, governance, and so on (Bordoloi and Das, 2012). Although this mission of NPTEL is intended to enhance the quality of engineering education in the country by providing free online courseware, the open universities and ODL institutions can also tie up with these providers, so that all students can utilise the resources.

2. At present in India, Study Webs of Active Learning for Young Aspiring Minds (SWAYAM), has been introduced by the Ministry of HRD, GOI, where teachers from institutions like the IITs, IIMs, and central universities have been offering online courses to the citizens of India. In order to ensure the quality of the contents produced and delivered through SWAYAM, seven National Coordinators have been appointed. They are NPTEL for engineering, UGC for post-graduation education, Consortium for Educational Communication for under-graduate education, NCERT and NIOS for school education, IGNOU for out of the school students, and IIMB for management studies. In the first phase, courses in areas of engineering education, social science, energy, management, basic sciences are being offered, and at least one crore students are expected to benefit in 2-3 years through this initiative. Besides, it has been stated that at least 20 per cent materials from the total number of courses by an Indian University should be released in the form of MOOCs for the fast mobilisation and dissemination of knowledge and information among the masses. Another recommendation is that all universities should develop the learning management system and release their open educational resource (OER) materials as MOOCs in the SWAYAM platform as soon as possible for making education more vibrant and sustainable.

3. OERs: for the greater interest of the public or the stakeholders, the use of OERs has presented itself as the most viable option to disseminate educational benefits to the whole of India. The historical and functional definition of OER, as has been pointed out by UNESCO in 2002, is: “Technology-enabled, open provision of educational
resources for consultation, use and adaptation by a community of users for non-commercial purposes...typically made freely available over the Web or the Internet (Kawachi, 2013). In India, where higher education usually benefits only a small section of the people, because of its being a very costly affair, OERs have provided ocean of opportunities to enjoy the benefits of education even without going to an educational institute. In today’s world, OERs have emerged as the resources to be used for sharing, adapting and reusing in order to educate the whole masses. In India, MOOCs may push the OER-movement to a significant height. With the help of the different Community Information Centres, NGOs and other Social and Government Organisations located at different parts of the country, educational institutions may use OERs that can enlarge teaching-learning experiences, expand the reach of education, and make learning possible through participation and from multiple sources at the same time. Of late in India, following the National Knowledge Network Project, various courses have been launched in the form of OERs and MOOCs, particularly by the ODL institutions, which became instrumental in training people mostly in the field of agriculture and small-scale industries for a better socio-economic growth of India.

Thus, OERs can be seen as an evolving pedagogy in the context of present-day India and other countries of the world. Gajaraj Dhanarajan and David Porter (2013) tried to portray in their book about the perspectives on OER in the Asian countries like China, Hong Kong, India, Malaysia, Pakistan, Indonesia, Vietnam, Japan, Korea and so on. Besides, it also provided some information regarding some important case studies conducted in some Asian Open Universities and the discussions of which provide many important ideas regarding the use and practices of OERs in the context of Asia. The experiences gained through the findings in this book will help many new universities to conduct the OER practices in their Region in extensive ways. Similarly, Paul Kawachi (CEMCA, 2013) in his book has provided some meaningful, relevant and appropriate use of ICT-enabled OERs to serve the educational and training needs of the Commonwealth member states of Asia. By consulting these resources and models, the Indian universities and institutions can also design its SLMs as part of Open Access applicable in the their regions.

- Skill development through ODL mode: for producing a skill-enabled population in India, in December 2013, the Department of Economic Affairs, Ministry of Finance, Govt. of India, notified National Skill Qualification Framework (NSQF), which is being facilitated by the National Skill Development Agency. This policy can easily be adopted by the ODL universities and institutions for its flexible nature. The NSQF provides the outcome based approach, which is very much essential for assessing the acquired knowledge of the people in immediate way. Again, it is also helpful to each institution, student and employer to get themselves a self-assessment regarding the progression pathways in terms of their competency level i.e. what they can do and cannot do after taking the course under NSQF. Besides these, this is the only framework through which uniformity in terms of course duration, curriculum, entry requirements as well as title or degree to be awarded across the country can be established. The most interesting benefit of this course is that it facilitates the Recognition of Prior Learning through which people irrespective of their age, sex, and geographical distance can get formal recognition of their traditional skills. The NSQF also helps in the alignment of the Indian qualifications to international qualifications in accordance with relevant bilateral and multilateral agreement. Thus, each Indian Open University should adopt such recognised skilled-based courses in order to develop the national and international mobility among the people across the nation.
Mobile Learning: in the context of the twenty-first century, Mobile learning is yet another educational avenue that can easily transform the arena of higher education by disseminating knowledge and information at a cheaper cost. It was Bangladesh Open University, which for the first time used M (Mobile) Learning for transforming the rural population in Bangladesh among the South Asian Countries of the world. Even, UNESCO and United Nations High Commissioner for Refugees celebrate some events like Mobile Learning Week where the basic agenda is to promote education in emergencies and crises situation. The open universities and ODL institutions in India can use mobile learning in a significant way for strengthening Inclusion in education and preserving the continuity of learning during the time of conflict and disaster.

7. Conclusion

ODL can facilitate as well as strengthen the system of higher education in India to a significant extent. It is because ODL can easily provide quality education and global learning at the doorstep of the people at a cheaper cost. It also encourages people to share their knowledge and innovative thoughts by using various ICT tools in a wider context. However, the vision of an open university or an ODL institution should be focussed on the needs of the locality as well as on fulfilling these needs. In order to maintain reputation, an open university should design such courses that bring special credit and recognition to the university itself. The education received even from an open university or an ODL institution can gear up the living standard of the people so that they are able to have a dignified life. Therefore, an ODL institution should try to develop need-based and skill-based courses, which have the direct link with industrial and vocational recruitments. Thus, ODL shall surely be able to transform and empower the current phase of higher education in a country like India.

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Further reading


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Genre analysis of the “About Us” sections of Asian Association of Open Universities websites

Louise S. Villanueva, Mary Aizel C. Dolom and Jennifer S. Belen

Office of the Vice Chancellor for Academic Affairs,
University of the Philippines Open University, Laguna, Philippines

Abstract

Purpose – This paper is a corpus-driven study of written electronic texts, particularly the “About Us” sections in the university websites of 41 members of the Asian Association of Open Universities (AAOU). This inquiry is important because it will provide an insight as to how AAOU members describe and portray themselves in the World Wide Web, a platform which is highly utilized in the field of distance education. This will also lead to the understanding of conventional knowledge among AAOU members during the period of study. The paper aims to discuss these issues.

Design/methodology/approach – Guided by Swales’ (1990) seminal work on genre analysis, the researchers conducted a three-part genre analysis which involved identification and analysis of moves, keywords, and concordance lines.

Findings – Results of the keyword analysis were conducted using the AntConc application. Anthony (2017) found that the top 100 keywords with positive keyness exemplified inherent characteristics of open and distance learning institutions as well as characteristics common to higher education institutions and their thrusts. The analysis also found that the use of adjectives and verbs with positive denotations is common in the “About Us” sections. Concordance for several keywords related to the overarching theme of the AAOU 2017 Conference then revealed that the AAOU members are active in the discourse about accessibility, assessment, and quality, while there is not much discourse on openness, inclusivity, and justice. Meanwhile, subscribing to equality and equity could still be a point of discussion among the AAOU members as the concordance analysis revealed more discourse on equality than equity as a goal and principle. Overall, results of the genre analysis resonated with previous studies of the academic genre as the “About Us” sections are promotional in both authoritarian and inclusive ways.

Originality/value – The inquiry will provide the members of the AAOU with an overview of their common communicative purposes, overused or underused keywords, and their usage of these words which they may opt to work on in the future.

Keywords Academic web genre, Corpus-based study, Genre analysis, Keyword analysis, Open and distance learning genre

Paper type Research paper

1. Introduction

Genre analysis involves the study of language and its usage and application in different settings (Bhatia, 1997). As a method that uncovers structural patterns of texts, genre analysis led to a plethora of studies that provided an understanding of genre across academic disciplines. Scholars have also come up with different approaches to genre analysis and applied these to written and spoken texts (Pho, 2013). However, the emergence of the World Wide Web offers new avenues to apply genre analysis to electronic texts.
This provides a new area that will allow researchers to make sense of conventional knowledge as presented in the World Wide Web. In the context of education, scholars have been dissecting parts of university websites. Tomarkova (2015) studied the websites of American, British, and Czech universities to determine similarities and differences in terms of multimodal features. It was found that the universities differed in their representation, and these could be attributed to their social and cultural contexts. Meanwhile, some scholars took a critical approach in studying university websites. One example is Zhang and O’Halloran’s (2013) analysis of the National University of Singapore’s (NUS) website and strategies which positioned the university as a global player rather than a national institution and found that in the past 14 years, NUS’s website shifted from an information-based to a consumer-based approach. These findings also resonated with a study conducted by Jessee (2009) which focused on student profiles published in university websites. These profiles were found to be promotional in function, but were also anchored in the academic and research thrusts of the universities. Given these examples, it can be said that scholars have recognized university websites as a means of promotion. While this assumption has been founded, Caiazzo (2009, as cited in Yang, 2013) still recognized university websites as excellent study texts for corpus linguistics. Accordingly, this will permit an in-depth look into universities’ construction of social realities and the meanings that they attached in varying contexts.

The current study is an attempt to apply corpus linguistics in written electronic texts, particularly the “About Us” sections of Asian Association of Open Universities (AAOU) members’ websites (Asian Association of Open Universities, n.d.a, b). This inquiry is important because it will provide an insight as to how AAOU members describe and portray themselves in the World Wide Web, a platform which is highly utilized in the field of distance education. This will also lead to the understanding of conventional knowledge among AAOU members during the period of study. Moreover, as genre is deemed as a dynamic construct (Bhatia, 1997), the inquiry will provide the members of the AAOU with an overview of their common communicative purposes, overused or underused keywords, and their usage of these words which they may opt to work on in the future. With these, the researchers asked the following questions:

**RQ1.** What are the rhetorical moves of the “About Us” sections of AAOU members’ websites?

**RQ2.** What are the overused and underused keywords utilized by AAOU members in their “About Us” sections?

**RQ3.** In what contexts do AAOU members used specific keywords in their “About Us” sections?

### 2. Related Literature

In describing the macrostructure of the “About Us” sections, the researchers used Swales’ (1990) concept of rhetorical moves. Accordingly, rhetorical moves are discourse units that require researchers to segment parts of the texts based on their communicative purpose. In Swales’ seminal work, these rhetorical moves permit those who are not part of the discourse community to understand and learn about the genre. One of the foremost move analyses conducted on websites was done by Askehave and Nielsen (2005) on a European industrial company website. Accordingly, the website employed the following rhetorical moves to achieve its communicative purpose: attracting attention; greeting; identifying sender; indicating content structure; detailing (selected) content; establishing credentials; establishing contacts; establishing a discourse community; and promoting an external organization. Guided by Askehave and Nielsen (2005), scholars have also followed through...
with genre analysis of websites. Isa et al. (2016) used Askehave and Nielsen’s (2005) rhetorical moves as benchmark in analyzing the websites of oil companies worldwide. The same was done by Johari and Ali (2015) in their analysis of the websites of Malaysian small and medium enterprises (SMEs). The scholars found that while Malaysian SMEs had varying moves, the goal of these companies was still evident and that was to persuade customers to buy company products and/or avail company services. Sensitivity to audience’s needs could also be observed as the websites of Malaysian SMEs maximized on Islamic contents.

In the context of education, move analysis has been employed in the study of academic outputs. It has been applied to research articles across different fields of study. Cross and Oppenheim (2006) analyzed the abstracts of protozoology studies, and managed to uncover a five-move pattern which included the following: situating the research within the scientific community; introducing the research through its features and/or objectives; describing the methodology; discussing results; and drawing conclusions and presenting recommendations. Scholars have also been interested in the similarities and differences of abstracts written by native and non-native English speakers (e.g. Li, 2011; Marefat and Mohammadzadeh, 2013; Niu, 2013; Talebzadeh et al., 2013; Benham and Golpour, 2014; Nasser and Nematollahi, 2014; Al-Khasawneh, 2017). Aside from abstracts, move analysis has also been applied to application essays. Ding (2007) analyzed the moves used by medical and dental school applicants. Among these were “explaining the reason to pursue the proposed study; establishing credentials related to the fields of medicine/dentistry; discussing relevant life experience; stating future career goals; and describing personality.” Samraj and Monk (2008) also used move analysis to compare the application essays of applicants to the Linguistics, Business Administration, and Electrical Engineering program of a state university.

In the study of academic websites, Yang (2013) conducted a move analysis in the “Why Choose Us?” section of websites of universities worldwide. The analysis yielded the following six moves used to promote universities to potential students: establishing a distinguished status; ensuring excellent teaching quality; presenting a leading role in research; offering attractive incentives; enjoying a friendly environment; and ending with suggestions. Meanwhile, Zhang (2017) dissected the “About Us” sections of five universities in China, and found that there were seven obligatory or optional moves exemplified by 11 different sub-sections. These were as follows: welcoming (e.g. president’s message); establishing credentials (e.g. overview, history, facts & figures, publications); describing administration (e.g. leadership); attracting attention (e.g. university logo, motto, song, video); offering extra services (e.g. facilities available, international student services); locating the service (e.g. visiting the campus); and soliciting response (e.g. contact us).

Aside from mapping out the moves in the electronic texts, genre analysis can also be approached through keyword analysis (Trible, 1999 as cited in Xiao and McEnery, 2005). Keyword analysis allows researchers to determine the words considered as “key” since these have unusual frequency in relation to a reference corpus (Scott, 1997 as cited in Gabrielatos and Marchi, 2012). According to Scott (2015), keyness may be positive or negative. Words with positive keyness appeared “more often than would be expected by chance in comparison with the reference corpus” while words with negative keyness occurred less. Keyword analysis has been at the core of research studies in literature. Scholars relied on keyness to dissect the works of prominent writers such as William Shakespeare (Culpeper, 2009), Jane Austen (Fischer-Starcke, 2009), and John Irving (Cermakova, 2015). Likewise, social scientists have also incorporated keyword analysis in the study of media and politics such as Barrett’s (2007) comparison of articles about the war on terror published by newspapers in the USA, Great Britain, and Germany, Clark’s (2011) study about the Iraq war based on the broadcasts of BBC and CBS, and...
Charteris-Black’s (2012) dissection of Tony Blair’s speeches. Keyword analysis has also been helpful in understanding academic web genre. Yang (2013) generated the keyness of the “Why Choose Us?” sections of university websites through the use of Scott’s (2008) Wordsmith tool. The analysis yielded more overused than underused keywords. The keywords were also consistent with the promotional nature of the genre that also portrayed the universities as both authoritarian and inclusive. The use of collective pronouns such as “we” and “our” were overused to personalize (Fairclough, 1993 as cited in Yang, 2013) the universities, and connect more to the readers. Similarly, adjectives in superlative forms were also overused to attract more students. Words that conveyed absence or contradiction such as “no,” “but,” or “not” were avoided.

While keyness renders a quantitative perspective of the electronic texts, concordance lines have also been of interest among scholars because they serve as indicators of the contexts where the words occurred (Kent University, n.d.). Concordances have been deemed helpful in the English language learning and vocabulary retention of non-native speakers (Jalilifar et al., 2014; Yilmaz and Soruc, 2015). Accordingly, concordances permit learners to make sense of English words easily. Aside from this, concordances also allow researchers to link words with the bigger context, a method forwarded by Weber (2001) in teaching law undergraduates how to write legal essays. Web genre has also benefitted from the use of concordances. Jimenez-Crespo (2011) analyzed American corporate websites geared for customers in Spain. Significant differences and impact were found in the use of Spanish words in original and localized legal sections.

Guided by the literature cited on move analysis, keyword analysis, and concordance or keyword-in-context analysis, the researchers proceeded with the three-part genre analysis.

3. Methodology

The researchers chose to study the “About Us” sections of AAOU members’ websites in order to grasp how open universities in Asia present themselves. In line with this, the researchers referred to the AAOU website to get the list of their full and associate members (AAOU, n.d.a, b). All of these members were considered for the study. Exclusion was only applied in the following cases: the university website does not have an explicit “About Us” page; the university website is down during the duration of the data gathering; the university website belongs to the supra-system where the open university is a constituent; and the university website does not have a direct and complete English translation. In the course of the study, the researchers managed to dissect the “About Us” sections of 41 out of 63 full and associate members of AAOU (Table I).

After the selection of samples, the researchers proceeded to conduct the move analysis. It is important to note that while Swales defined what constitutes as rhetorical moves, he did not specify how move boundaries can be determined (Lewin et al., 2001, as cited in Nordquist, 2017). With these, the researchers relied on how each of the “About Us” section was divided. This came in the form of sub-sections that have individual hyperlinks. The researchers read each sub-section and noted how these were sequentially arranged in the “About Us” sections. There were many overlapping sub-sections and the researchers had a consensus as to which sub-section should be merged with another. Since the researchers ranked how these sub-sections were presented, the median was used to arrive with the final sequence of the sub-sections or in this case, the rhetorical moves. If a tie between two rhetorical moves was found, the researchers then looked at the mode then the mean of the sequences.

For the keyword analysis, the researchers manually collected the electronic texts through the use of an open-sourced scraper (Heaton, 2010) for Google Chrome. The contents were then compiled into a text file that was loaded to AntConc 3.5.0, an open-sourced text analysis software developed by Lawrence Anthony (2017) of Waseda University. In order to measure keyness in AntConc, the electronic texts were analyzed in relation to
The British National Corpus (2007), one of the largest and most used reference corpora. Keyness comes in log-likelihood or chi-square statistics. In this study, the researchers used log-likelihood as it is deemed more reliable and more considerate of data that is not normally distributed (Xiao, n.d.). More than the log-likelihood scores which determine statistical significance, Gabrielatos and Marchi (2012) suggested for researchers to also consider effect size which is the percentage difference of the frequencies of electronic texts being studied and the reference corpus. Both log-likelihood and effect sizes were considered for the current study. The researchers did not employ a stop list. Instead, keyness for words was generated organically, and the researchers deliberated on the keywords that could be eliminated due to insignificance. These commonly included linking verbs, articles, prepositions, and conjunctions.

<table>
<thead>
<tr>
<th>Type of membership</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full</td>
<td>1. Al-Madinah International University, Malaysia</td>
</tr>
<tr>
<td></td>
<td>2. Allama Iqbal University, Pakistan</td>
</tr>
<tr>
<td></td>
<td>3. Asian e-University, Malaysia</td>
</tr>
<tr>
<td></td>
<td>4. Beijing Open University, China</td>
</tr>
<tr>
<td></td>
<td>5. Chongqing Radio and TV University, China</td>
</tr>
<tr>
<td></td>
<td>6. Dr B.R. Ambedkar Open University, India</td>
</tr>
<tr>
<td></td>
<td>7. Hanyang Cyber University, Korea</td>
</tr>
<tr>
<td></td>
<td>8. Ho Chi Minh City Open University, Vietnam</td>
</tr>
<tr>
<td></td>
<td>9. Indira Gandhi National Open University, India</td>
</tr>
<tr>
<td></td>
<td>10. Institute of Distance and Open Learning, Gauhati University, India</td>
</tr>
<tr>
<td></td>
<td>11. International Center for Academics, Nepal</td>
</tr>
<tr>
<td></td>
<td>12. Karnataka State Open University, India</td>
</tr>
<tr>
<td></td>
<td>13. Korea National Open University, Korea</td>
</tr>
<tr>
<td></td>
<td>14. Krishna Kanta Handiqui State Open University</td>
</tr>
<tr>
<td></td>
<td>15. National Open University, Taiwan</td>
</tr>
<tr>
<td></td>
<td>16. Open University Malaysia, Malaysia</td>
</tr>
<tr>
<td></td>
<td>17. Payame Noor University, Iran</td>
</tr>
<tr>
<td></td>
<td>18. School of Open Learning, University of Delhi, India</td>
</tr>
<tr>
<td></td>
<td>19. Shanghai Open University, China</td>
</tr>
<tr>
<td></td>
<td>20. Singapore University of Social Sciences, Singapore</td>
</tr>
<tr>
<td></td>
<td>21. Sukhothai Thammathirat Open University, Thailand</td>
</tr>
<tr>
<td></td>
<td>22. Symbiosis Center for Distance Learning, India</td>
</tr>
<tr>
<td></td>
<td>23. Tamil Nadu Open University, India</td>
</tr>
<tr>
<td></td>
<td>24. The Open University of China, China</td>
</tr>
<tr>
<td></td>
<td>25. The Open University of Hong Kong, China</td>
</tr>
<tr>
<td></td>
<td>26. The Open University of Japan, Japan</td>
</tr>
<tr>
<td></td>
<td>27. The Open University of Kaohsiung, Taiwan</td>
</tr>
<tr>
<td></td>
<td>28. The Virtual University of Pakistan, Pakistan</td>
</tr>
<tr>
<td></td>
<td>29. Tianjin Open University, China</td>
</tr>
<tr>
<td></td>
<td>30. UNITAR International University, Malaysia</td>
</tr>
<tr>
<td></td>
<td>31. Universitas Terbuka, Indonesia</td>
</tr>
<tr>
<td></td>
<td>32. University of the Philippines Open University, Philippines</td>
</tr>
<tr>
<td></td>
<td>33. Wawasun Open University, Malaysia</td>
</tr>
<tr>
<td></td>
<td>34. Yangon University of Distance Education, Myanmar</td>
</tr>
<tr>
<td></td>
<td>35. Yunnan Open University, China</td>
</tr>
<tr>
<td></td>
<td>36. Zhejiang Open University, China</td>
</tr>
<tr>
<td>Associate</td>
<td>37. Arab Open University, Kuwait</td>
</tr>
<tr>
<td></td>
<td>38. Islamic Online University, Gambia</td>
</tr>
<tr>
<td></td>
<td>39. Don Mariano Memorial State University (DMMSU) Open University, Philippines</td>
</tr>
<tr>
<td></td>
<td>40. Northern Ireland Institute of Business and Technology British, UK</td>
</tr>
<tr>
<td></td>
<td>41. Southeast Asian Ministers of Education Organization Regional Open Learning Center (SEAMOLEC), Thailand</td>
</tr>
</tbody>
</table>

Table I: AAOU members’ websites included in the samples
For the concordance analysis, the concordance function of AntConc (Anthony, 2017) was used to determine the location of words in the website and analyze how these were used. The analysis yielded a total of 7,300 words, when aggregated. From these 7,300 words, the researchers selected and agreed on which words would be the focus of the study. The researchers only selected those that were related to AAOU 2017 Conference’s main theme, “Open University for Inclusive and Equitable Quality Education” and the following sub-themes: “Repositioning Open University in the Digital Era: Providing Sustainable Learning Pathways”; “Leadership in Open, Distance, and Online Learning University”; “Quality Assurance in Open University”; “Assessment and Accreditation of Learning in Open University”; and “Access and Justice in Open, Distance and Online Learning” (AAOU, 2017). This was done to ensure that the study was in line with what the AAOU deemed as important trends in the field of open and distance education. With regard to the context of the words, the researchers conducted a microanalysis of the sub-sections where the words appear. This was followed by paragraph and sentence microanalysis. The researchers relied on consensus in terms of merging and separating identified themes.

4. Results and discussion
4.1 Move analysis
AAOU members varied in terms of rhetorical moves. The researchers focused on the 12 rhetorical moves present in 1 out of 5 “About Us” sections of AAOU members’ websites (see Table II). First, institutions introduced themselves by providing an overview that encapsulates their establishment and mandate. For some institutions, this move may also come with the indication of the institution’s vision, mission, and goals. This was followed by a welcome message addressed to the visitors from the head of the institution. The message reiterated more on the thrust of the university, specifically on the programs offered that

<table>
<thead>
<tr>
<th>Rhetorical move</th>
<th>Communicative purpose</th>
<th>Sub-sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introducing the institution</td>
<td>Providing an overview of the institution through a number of information about its history and mandate</td>
<td>Overview</td>
</tr>
<tr>
<td>Greetings</td>
<td>Welcoming the visitors of the institution’s website</td>
<td>President’s message</td>
</tr>
<tr>
<td>Establishing administrator’s suitability</td>
<td>Letting the visitors know that the institution is being run by a competent administrator with impressive credentials</td>
<td>President’s profile</td>
</tr>
<tr>
<td>Establishing integrity</td>
<td>Providing an ideal image of the institution</td>
<td>Vision, mission and goals</td>
</tr>
<tr>
<td>Establishing accomplishments</td>
<td>Providing an overview of the opportunities and challenges taken and overcome by the institution over the years</td>
<td>History</td>
</tr>
<tr>
<td>Introducing the administration</td>
<td>Providing the visitors with information about the officials who run the institution’s offices</td>
<td>Board of directors, executive committee organizational chart</td>
</tr>
<tr>
<td>Detailing organizational structure</td>
<td>Providing the visitors with information about the functions of the institution’s offices</td>
<td>Organization, organizational chart</td>
</tr>
<tr>
<td>Supplying organizational data</td>
<td>Providing facts and figures to describe the institution</td>
<td>Facts and Figures</td>
</tr>
<tr>
<td>Reinforcing accomplishments</td>
<td>Providing information about current institutional milestones</td>
<td>Achievements, milestones</td>
</tr>
<tr>
<td>Offering services</td>
<td>Providing information about the services offered and facilities available in the institution</td>
<td>Support and facilities</td>
</tr>
<tr>
<td>Establishing contact</td>
<td>Providing lines of communication through different channels</td>
<td>Contact Us, campus location</td>
</tr>
<tr>
<td>Establishing influence and connections</td>
<td>Providing information about partner institutions and networks</td>
<td>Linkages</td>
</tr>
</tbody>
</table>

Table II. Rhetorical moves employed by the AAOU members in their “About Us” sections
visitors may consider for application. Initiatives to live up to the university’s vision, mission, and goals were also discussed. AAOU members further introduced the head of institution by sharing his or her professional credentials which exemplified a prolific career in instruction, research, and public service. The aim of this move was to establish his or her suitability to govern the institution.

Once the head of the institution had been properly introduced, majority of the institutions also opted to provide a section that delineates their mission, vision, and goals. This served as a venue where an idealized image of the institution was described and where integrity was being established by mentioning the principles that guide the institution. This rhetorical move was followed by the establishment of the institution’s accomplishments through its historical milestones achieved by the institution as a whole or by the members of its community.

More details were provided through the introduction of the officials in charge of the offices in the institution. This was followed by the provision of the key functions of each of these offices through organizational charts which showed the supra-system and sub-systems that worked interdependently towards achieving the institution’s vision, mission, and goals. More facts and statistics were then provided along with current milestones on the instruction, research, and public service thrusts of the universities.

The next move of the “About Us” sections was geared more toward an attempt to interact with the websites’ visitors. This was accomplished through the rhetorical move of offering services through various physical and online facilities and establishing contacts through the provision of office addresses, e-mail addresses, and social media accounts. The last move is to show influence and connections with other institutions of similar mandates by providing information regarding institutional linkages.

It can be deduced that the rhetorical moves employed by AAOU members also resembled those that were mapped by Zhang (2017) in his dissection of the “About Us” sections of Chinese university websites. Some similarities with rhetorical moves in Yang (2013) and Askehave and Nielsen (2005) were also evident. This shows that the “About Us” sections of AAOU members’ websites exemplified a promotional culture that relied on authoritarian and inclusive portrayals. The former can be seen in the rhetorical moves that emphasized on information about AAOU members’ history and mandate, suitability of administrators, commitment to integrity, structure and functions of the organization, reinforcement of institutional accomplishment, and display of influence through networks and linkages. Meanwhile, inclusivity was shown through the welcome message from the President or Chancellor as well as the offer to provide services and the invite to visit the campus and connect through available channels.

4.2 Keyword analysis
The analysis in AntConc (Anthony, 2017) yielded a total of 193,218 words and 7,300 words, when collated. Among these, only 2,974 were calculated as keywords with significant statistical and effect size differences. An overwhelming majority of these keywords had positive keyness. As delineated in the methodology, the researchers decided to eliminate words such as linking verbs, articles, prepositions, and conjunctions (please see Appendix to find the top 100 keywords with positive keyness). A categorization of these keywords showed that AAOU members emphasized the salient characteristics of open and distance education. These can be seen in the high and positive keyness of words “open” and “distance” as well as the words “online” and “face” which were used to indicate blended modes of learning (face-to-face plus online mode of learning).

The choice of pronouns also resonated with Fairclough (1993 as cited in Yang, 2013) specifically the use of collective pronouns such as “their” and “our.” It could also be deduced that AAOU members are still highly masculine, as exemplified by the high positive keyness
of the pronoun “his.” Yang’s (2013) findings that pertained to the use of positive adjectives were also evident in the “About Us” sections of AAOU members. Words with negative denotations (e.g. “no,” “not,” or “without”) were not used as much as “all,” “first,” “has,” “have,” “more,” and “well.” Same focus was given to verbs that denote positive actions such as “achieve,” “ensure,” “provide,” “providing,” “service,” and “signed.”

Apart from the attempt to distinguish open universities from others through the mode of learning and the worldview of openness, the “About Us” sections of AAOU members’ websites still used words that often characterized universities in general, such as “international,” “quality,” “system,” “established,” “national,” and “professional,” among others. Physical and online facilities were also mentioned (e.g. “campus,” “centers,” and “institution”). Aside from these characteristics, a bulk of the Top 100 keywords with positive keyness pertained to the thrusts of the universities: academic (e.g. “learning,” “knowledge,” “students,” “programs,” “study,” “teaching,” “course,” “degree,” “faculty,” “learners,” “professor,” and “registration,” among others), research and public service (e.g. “research,” “public” and “policy”). There were also keywords that referred to the administration of the universities (e.g. “financial,” “Chancellor,” “mutual,” “understanding,” “division,” “President,” “council,” “business,” “department,” “memorandum,” “vice,” and “control”) whereas some cut across areas in the universities’ mandates (e.g. “development,” “management,” “technology,” “services,” “resources,” “activities,” and “plan”). The universities’ objective to have societal impact was also apparent in the words “society,” “state,” “country,” “social,” “world,” and “Asia,” among others.

In terms of negative keyness, majority of the results were letters that served as enumerators (i.e. “a,” “b,” “c,” among others). The pronoun “I” was also found to occur least in the “About Us” section. This could be attributed to the fact that the said pronoun countered the personalization of the universities as collective entities. Hence, the use of the pronoun “I” was only limited to the second rhetorical move which was carried out through the welcoming message of the organization head.

4.3 Concordance analysis
As articulated in the methodology, there were 7,300 words yielded by the concordance function of AntConc (Anthony, 2017), and the researchers agreed to only select those that were related to AAOU 2017 Conference’s main theme and sub-themes. This was done to ensure that the study is in line with what the AAOU deemed as important trends in the field of open and distance education. After deliberations, the following words were selected: open or openness; access, accessible, or accessibility; assessment; quality; inclusive or inclusivity; equal or equality; equity or equitable; and justice. Illustrative quotes as to how these words were used in the websites are shown in Table III.

4.3.1 Open or openness. In the “About Us” section of AAOU members’ websites, the word “open” managed to have a high ranking and positive keyness primarily because the word was part of the universities’ names as well as the area or field of study of the academics working in the universities. The philosophy of openness is said to permeate all facets of open and distance education. However, Alfonso (2014b) pointed out that the concept of openness should be deemed as a moving target that goes beyond the eradication of barriers to learning. It should also adopt to the advancement of information and communication technology (ICT) in education. Further, Hug (2017) argued that understanding the concepts and contexts of openness is a must to spark informed debates on organizational, methodological, and critical aspects of higher education.

With this in mind, the researchers found and analyzed the varying contexts wherein AAOU members used the word open. In the AAOU members’ websites, the word open was referred to as follows: the accessibility of services, facilities, and materials; an adjective to
Open accessibility of services, facilities, and materials as an adjective to describe what the universities stand for a policy for admission mode of learning a university practice a free source a system

Openness a practice in admission and enrollment the core values of the AAOU members

Access, accessible, or accessibility general admission admission for the marginalized sector

Theme Illustrative quote

"Distance education utilizes open media," “The objective is to framework a sustainable provision of quality open textbooks to teachers and students"

"[...] our door to learning is always open," “[...]we have to open the horizons of knowledge and provide a new and useful knowledge for them to achieve their ambition"

“In 1997, NOU abolished the entrance examination and started to offer a wider open admission to learners” “It has tried to increase the Gross Enrollment Ratio (GER) by offering high-quality teaching through the Open and Distance Learning (ODL) mode”

“KNOU aims to serve as the fount that makes the dream of a better, harmonious world a reality for all by providing first-class educational environment, by its unwavering support for research, and by being an open source for knowledge and exchange to the members of our world community”

“The objective of SOES is to promote, advance and disseminate knowledge through the open and distance learning system, in order to provide education, skill development, and lifelong learning opportunities to all segments of the population from India and other countries”

“[...] the University has drawn up an innovative strategy, by offering greater flexibility and openness in terms of course-wise enrollment, so that learners can opt for a capsule of a few relevant courses which suit their requirements”

“The central part of this emblem symbolizes a peacock, the vehicle of Saraswati, the goddess of knowledge and wisdom. The circular strokes spreading outwards indicate openness, dynamism and contribution. The YCMOU emblem thus signifies the spread of knowledge, far and wide, which is the motto of the university”

"To achieve the twin objectives of widening access for all sections of society and providing continual professional development and training to all sectors of the economy, the University uses a variety of media and latest technology in imparting education,” and “Asia e-University views itself as an enabler to be harnessed by Asian educational institutions to increase cross-border accessibility of their programmes, especially in critical areas that are in demand for capacity-building”

“Specific efforts shall be made for providing access to education and equity in opportunities to women, Scheduled Castes, Scheduled Tribes, the rural population, the remote areas, tribal regions, differently-abled, and the socially and economically weaker sections of society”

(continued)
<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>in relation to equality</td>
<td>“We aspire for the highest academic integrity and in providing equal rights, equal access and equal treatment where learning opportunities are concerned”</td>
</tr>
<tr>
<td>in relation to equity</td>
<td>“The University shall strive to develop a national network using emerging technologies to meet the challenges of access and equity”</td>
</tr>
<tr>
<td>in relation to academic instruction</td>
<td>“The choice of technology should take into account availability, accessibility and acceptability. Priorities in the use of technologies for distance education will have to be different in different contexts. The possibilities of outreach and scale are as important considerations for IGNOU as individualized access and interactivity”</td>
</tr>
<tr>
<td>services and facilities</td>
<td>“Special focus is given to the development, access and delivery of the e-library. The digital library is accessible to all AeU Library members, students, staff, researchers and scholars from any place and at all times”</td>
</tr>
<tr>
<td>attainment of higher education and quality</td>
<td>“Our mission is to provide Filipinos everywhere access to quality higher education through innovative methods of teaching and learning that are designed to be responsive to their needs as well as to national development priorities”</td>
</tr>
<tr>
<td>a challenge</td>
<td>“The University shall strive to develop a national network using emerging technologies to meet the challenges of access and equity”</td>
</tr>
</tbody>
</table>

**Assessment**

| the type or kind of assessment being used in the university          | “The self-assessment activities, included in the books, help ensure the acquisition of learning outcomes” “The evaluation model (for students) is also changing from summative assessment to formative assessment” |
| the system or tools for assessment being used in the university     | “SCDL has for the first time in India, introduced online assessment systems, to pursue our mission of providing learners with flexible learning opportunities anywhere, anytime and to provide ultimate convenience, ease and flexibility to our students” |
| as part of university policies                                     | “[The Academic Management Committee aims] To review and make recommendations to Senate on all matters of academic rules and regulations including admission and assessment policies” |
| as a university process                                             | “Planning & Development Division (PDD) (is) Involved in making five-year plans and annual plans of the University, mid-term assessment of plans, and manpower planning” |
| in relation to stakeholders’ performance                           | “The University will have to make strenuous efforts to sustain this hard-earned credibility by continuously improving the quality of learning materials, student support services and upgrading the system of professional development and assessment of academic and non-academic staff” |

**Quality**

| a state of being                                                    | “The unique quality the OUK bears will make it the city university that stimulates the rejuvenation of higher education market, enhances the occupational competitiveness and learning ability, creates an international platform of global learning and media utilization, and increases turnover and transformation for the city” |

(continued)
<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>in relation to admission</td>
<td>“The new approaches to delivery modes, such as online open access of our study material, the use of technology to support flexible learning model allowing learners to learn at a distance, experience enriched methods of Blended Learning/delivery methods and bringing parity in quality of education with regular students has raised the quality of students joining School of Open Learning since 2014-15...”</td>
</tr>
<tr>
<td>in relation to assurance and control</td>
<td>“...it (open learning) must offer quality education if it is to compete and collaborate with the conventional system. Due to its inherent character, the ODL system lends itself quite naturally to quality assurance and control [...]. These developments include, for example: the full implementation of the 3-3-4 academic system; the increased Government support for self-financing tertiary education, such as the provision of funds for teaching and learning quality enhancement, scholarships for students, and research for academic staff [...].”</td>
</tr>
<tr>
<td>as a major initiative of the universities</td>
<td>“The higher education environment of Hong Kong has experienced substantial changes since 2008 [...]. These developments include, for example: the full implementation of the 3-3-4 academic system; the increased Government support for self-financing tertiary education, such as the provision of funds for teaching and learning quality enhancement, scholarships for students, and research for academic staff [...].”</td>
</tr>
<tr>
<td>as a form of measurement</td>
<td>“Revisions implemented by integrating all of the requirements of quality standards required by the Act, Regulations State, AAOU QA Statements of Best Practices and also with the Strategic Plan and RENOP UT to meet national quality standards (BAN PT) and international (ISO 9001 and ICDE)”</td>
</tr>
<tr>
<td>as a university policy</td>
<td>“Simintas UT’s 2012 revised form an integrated quality policy which contains 10 components and 110 points in the form of quality policy statement as follows good practice”</td>
</tr>
<tr>
<td>as a university practice</td>
<td>“But by focusing on quality that we believe everyone can achieve their dreams through ODL”</td>
</tr>
<tr>
<td>as a preference</td>
<td>“In the spirit of moving ever forward through innovation and a dedication to quality, OUM has embarked on several initiatives to make studying even more accessible, affordable and flexible”</td>
</tr>
<tr>
<td>as a principle</td>
<td>“Promote interdependence among Asian countries in all areas of cooperation by identifying Asia’s common strengths and opportunities which will help reduce poverty and improve the quality of life for Asian people, whilst developing a knowledge-based society within Asia and enhancing community and people empowerment”</td>
</tr>
<tr>
<td>as an obligation to society</td>
<td>“Since 2002, the Open University (UT) has developed a quality assurance system (SIMINTAS) are used to ensure the quality of all products and activities at UT”</td>
</tr>
<tr>
<td>the state of university products</td>
<td>“The OUC has established four major supporting alliances to help fulfill its historic mission and realize its social values, develop a learning society and fully utilize available high-quality social sources”</td>
</tr>
<tr>
<td>the state of resources</td>
<td>“We believe in providing an innovative, comprehensive academic programmes that offer you top quality instruction, high institutional standards and a broad range of educational opportunities”</td>
</tr>
<tr>
<td>in relation to academic standards</td>
<td>“In the last 26 years, IGNOU, through high-quality self-learning material and innovative programmes, has established itself as a National Resource Center and a provider of quality education — at par with other national and international institutions of higher learning”</td>
</tr>
</tbody>
</table>

**Table III.**
<table>
<thead>
<tr>
<th>Theme</th>
<th>Illustrative quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>in relation to human resources standards</td>
<td>“As part of all ongoing plans the OUK is engaged in, enhancing the <strong>quality</strong> of human resources development and international cooperation are the two major missions. The OUK, the most competent social education university, will not just facilitate the building and enriching of city education network, but also provide infinite possibilities for development in metro Kaohsiung with global opportunities and diversities in the future.”</td>
</tr>
<tr>
<td>in relation to standards of university services</td>
<td>“BJOU is dedicated to offering high-quality educational service, fulfilling diversified and personalized continuing education and lifelong learning demands of all capital citizens, and promoting construction of Learning City Project in Beijing, by integrating education and technologies profoundly, implementing concept of ‘teaching without social distinction’, flexible yet diversified teaching methodologies and open-door enrolling policy.”</td>
</tr>
<tr>
<td>Inclusive</td>
<td>&quot;OUHK is inclusive&quot;</td>
</tr>
<tr>
<td>to characterize the university</td>
<td>“Being comprehensive and all-inclusive in the national and global domains and based on the world standards”</td>
</tr>
<tr>
<td>to characterize aspirations</td>
<td>“Inclusive access to higher education can thus transform our strong demographic advantage into a peaceful, modern and prosperous society”</td>
</tr>
<tr>
<td>a descriptor of accessibility that should be granted to society</td>
<td>“The Indira Gandhi National open University (IGNOU), established by an Act of Parliament in 1985, has continuously striven to build an inclusive knowledge society through inclusive education”</td>
</tr>
<tr>
<td>a mechanism for its improvement</td>
<td></td>
</tr>
<tr>
<td>Equal</td>
<td>“KKHSOU holds the promise of providing equal opportunities for higher education and bringing into its fold the deprived and denied sections of people of the North-East.”</td>
</tr>
<tr>
<td>accessibility of admission</td>
<td>“As an equal opportunity employer, Wawasan Open University provides a supportive environment that helps employees attain the right balance between their working lives and their personal commitments. We recognize the right and responsibility of our employees to play an active role in their professional development as they strive for excellence.”</td>
</tr>
<tr>
<td>ease of hiring and employment</td>
<td>“The graduates of the College are conferred a diploma which is equal to the completion of first two-year study at a university”</td>
</tr>
<tr>
<td>equivalence in course credit</td>
<td>“It is clear that Thais are an intelligent people, lacking only opportunities to expand their own knowledge and ability. They are an intelligent people who have shown that when given the chance to study at advanced levels, their accomplishments are equal to – and sometimes even surpass – the achievements of other civilized nations”</td>
</tr>
<tr>
<td>standards</td>
<td></td>
</tr>
<tr>
<td>Equality</td>
<td>“The university holds the promise of providing equality of opportunities for higher education and bringing into its fold the deprived and denied sections along with the fresh learners”</td>
</tr>
<tr>
<td>to convey a goal or an aspiration</td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>Illustrative quote</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>a principle that AAOU members would aim to uphold</td>
<td>“The OUC has established an alliance with a number of ministries and industry associations in accordance with the principles of ‘equality and mutual benefit, complementary advantages, distinctive development, resource sharing and win-win cooperation’”</td>
</tr>
<tr>
<td><em>Equitable</em></td>
<td>“Education’s ultimate goal is to seek the truth and uphold the truth. Integrity means insistently practicing what we preach. Perseverance requires will power that makes a person resilient against adverse learning challenges... With perseverance, education is achievable for all, and thus, education becomes equitable.”</td>
</tr>
<tr>
<td>an important goal of education</td>
<td></td>
</tr>
<tr>
<td><em>Equity</em></td>
<td>“To be the premier Open and Distance Learning institution in Asia through excellence, efficiency and equity in lifelong learning”</td>
</tr>
<tr>
<td>a goal</td>
<td></td>
</tr>
<tr>
<td>a challenge</td>
<td>“Provide an intelligent and flexible system of education to meet the challenges of access and equity, and work towards development of a knowledge society”</td>
</tr>
<tr>
<td><em>Justice</em></td>
<td></td>
</tr>
<tr>
<td>a core principle of the universities</td>
<td>“PNU is a university with an Islamic-Iranian identity which makes all its efforts to strengthen its scientific-research position among the other open and distance education universities of the world by developing excellence virtue and human virtues, promoting science and research, developing software movement, giving hope to its students and broadening knowledge boundaries. It has also made learning possible for everyone, everywhere, and at every time in a safe and secure place, based on the justice, and in line with the macro-policies of the Islamic Republic of Iran in national and global level”</td>
</tr>
</tbody>
</table>

Table III.
describe what the universities stand for; a policy for admission; a mode of learning; a university practice; a free source; or a system (Table III).

While the word “open” was mentioned more than 400 times (ranked 9th) in the “About Us” sections of AAOU members’ websites, “openness” was only used five times (ranked 1833rd), once as a proper name for a program, another as a practice in admission and enrollment and thrice with regard to the core values of the AAOU members (Table III).

4.3.2 Access, accessible, or accessibility. The United Nations Educational, Scientific, and Cultural Organization (2016) considers accessibility as one of the key pillars for lifelong education. Furthermore, Carlsen et al. (2016) through the United Nations Educational, Scientific, and Cultural Organization also discussed about the roles that open and distance learning institutions have served in ensuring accessibility of quality education. However, they also reported that barriers continually exist and must be addressed to reach more learners. In this regard, scholars and practitioners in open and distance learning institutions must continuously thicken the discourse on accessibility to serve as basis for action towards emerging and evolving issues.

In the AntConc (Anthony, 2017) wordlist for the “About Us” sections of AAOU members’ websites, the word “access” ranked 142nd \( (n=59) \) while “accessible” and “accessibility” ranked 624th \( (n=16) \) and 2285th \( (n=3) \), respectively. The contexts where these words were used were categorized as follows: general admission; admission for the marginalized sector; in relation to equality; in relation to equity; in relation to academic instruction, services and facilities; attainment of higher education and quality education; and a challenge (Table III).

4.3.3 Assessment. Scholars and practitioners have deemed assessment as an integral part of open and distance learning. Chaudhary and Dey (2013) emphasized that assessment is needed not just to serve as basis for grading students; it is also a means to determine the effectiveness of the programs, courses, and other related initiatives. Moreover, assessment plays a crucial role in developing students’ positive attitudes and behaviors in an open and distance education setting. While open and distance learning institutions vary in their assessment practices, Chaudhary and Dey (2013) reiterated that it is always a collaborative effort between the teachers and the students, and issues such as credibility and reliability must be addressed. Flor and Flor (2016) argued that open and distance learning institutions must also evaluate their assessment practices to best address the diversity of students. Given the efforts needed to ensure that assessment fits the contexts of both students and teachers, scholars and practitioners of open and distance education must continue reflecting about their assessment practices.

In the “About Us” sections of AAOU members’ websites, the word “assessment” appeared 25 times and ranked 388th among the keywords with positive keyness. The word was used as a proper noun for councils and departments and as faculty members’ field of expertise. Aside from these, AAOU members also talked about “assessment” in the following contexts: the type or kind of assessment being used in the university, the system or tools for assessment being used in the university, as part of university policies, as a university process, and in relation to stakeholders’ performance (Table III).

4.3.4 Quality. It is said that open and distance learning institutions still need to concretize their notions of quality (Belawati, 2008 as cited in Alfonso, 2014a). The AAOU (n.d.c) has published its quality assurance framework which covers the best practices in the following areas: policy and policy planning; internal management; learner and learners’ profiles; infrastructure, media, and learning resources; learner assessment and evaluation; research and community services; human resources; learner support; program design and curriculum development; and course design and development. While the AAOU quality assurance framework has been conceptualized, scholars and practitioners still continue the discourse on quality. As Belawati and Zuhairi (2007) pointed out, quality is a continuous process that relies heavily on people’s commitment.
Aside from the words “open,” “international,” and “distance,” “quality” also got one of the highest positive keyness, and it was ranked 21st in terms of usage \( (n = 192) \). Through concordance analysis, the researchers found that the word “quality” was used a lot and in different ways: a state of being; in relation to admission; in relation to assurance and control; as a major initiative of the universities; as a form of measurement; as a university policy; as a university practice; as a preference; as a principle; as an obligation to society; the state of university products; the state of resources; in relation to academic standards; in relation to standards of learning materials; in relation to human resources standards; and in relation to standards of university services (Table III).

4.3.5 Inclusive or inclusivity. The United Nations Sustainable Development Goal aims to “ensure inclusive and quality education for all and promote lifelong learning” (United Nations, n.d.). In particular, United Nations Educational, Scientific, and Cultural Organization (2016) called upon open and distance learning institutions to lead the initiatives targeted towards inclusion of people with disabilities. However, Kanwar and Cheng (2017) of the Commonwealth of Learning claimed that while open and distance learning is a key player in providing access to the marginalized and the disabled, inclusion could not solely be addressed by open and distance learning’s reliance on ICT. Accordingly, much must still be done to ensure that inclusivity covers not just ICT, but also materials and pedagogy among others. More importantly, Kanwar and Cheng (2017) emphasized that scholars and practitioners must build their capacity to continually exercise inclusion in the learning space.

The word inclusivity was not used in the “About Us” sections of AAOU members’ websites, but the word “inclusive” appeared seven times and ranked 1370th among the keywords with positive keyness. AAOU members used “inclusive” both to characterize themselves and their aspirations. “Inclusive” was also a descriptor of accessibility that should be granted to society and also a mechanism for its improvement (Table III).

4.3.6 Equal or equality. Open and distance learning institutions have been perceived as an alternative that could address the problems of inequality and inequity (Goswami, 2013). However, The Open University (2016) pointed out that open and distance learning scholars and practitioners must clarify what they mean by related concepts such as equality and equity among others. McMillan and Cotton (2015, as cited in Makoni, 2015) further explained that while open and distance learning is a powerful mechanism against inequality, a lot must be done to make the system and the environment more robust to widen the access and cater more to the disadvantaged.

In the “About Us” sections of AAOU members’ websites, the words “equal” and “equality” were both deemed as keywords. “Equal” occurred 14 times while “equality” was used four times. These words ranked 730th and 2015th in the words with positive keyness, respectively. Uses of the word “equal” were related to the following: accessibility of admission, ease of hiring and employment, equivalence in course credit, and standards (Table III). With regard to the word “equality,” it was used to convey a goal or an aspiration as well as a principle that AAOU members would aim to uphold (Table III).

4.3.7 Equitable or equity. Apart from inclusivity, equity is another primary concern of the UN Sustainable Development Goal for education. Alfonso (2014a, b) pointed out that equity is more attuned with open and distance learning. This could be attributed to the fact that in the history of open and distance learning, equity is perceived to be tantamount to access. While such provides an important facet in the policies of open and distance learning institutions, Yasmin (2010) calls for the continual and integral consideration of equity in other aspect of open and distance learning.

The word “equitable” was mentioned only once and was not considered as a keyword with positive or negative keyness. Meanwhile, the word “equity” appeared four times and
ranked 2016th among the keywords with positive keyness. Unlike the words “equal” or “equality,” the discourse on equity was not as evident in the “About Us” section of AAOU members’ website. In discussing the motto that the institution had been trying to live up to, the Open University of Hong Kong reiterated about being “equitable” as an important goal of education (Table III).

In the use of the word “equity,” it can be observed that AAOU members considered “equity” as both a goal and a challenge (Table III).

4.3.8 Justice. Open and distance learning has been regarded as an instrument to achieve social justice. However, despite its emphasis on access and equity, open and distance learning is still mired with barriers that prevent potential and current learners to maximize its affordances (Fadhlallah, 2011). Tait (2013) argued that the mission statements of open and distance learning institutions must be revisited, rethought, updated, and clarified since claims of commitment to development and social justice appeared to be “unsupported or naive.” Tait (2013) also encouraged the continuation of discourses pertaining to development and social justice with hopes that this could go beyond rhetoric.

In the present study, the researcher found that much like the word “equity,” the word “justice” was also mentioned 4 times and ranked 2084th among the keywords with positive keyness. However, it would be important to note that the use of the word “justice” was very limited in the “About Us” sections of AAOU members’ websites. In two concordance lines, the word “justice” pertained to positions taken by members of the universities. The other two concordance lines discussed “justice” as a core principle of the universities, specifically of the Open University of Hong Kong and the Payame Noor University in Iran (Table III).

Based on the concordance analysis, it can be deduced that AAOU members had been active in the discourse about accessibility, assessment, and quality. However, it remains unclear how AAOU members define openness. This is crucial since it is inherently at the core of the existence of open universities. In the same way, there is not much discourse on how inclusive AAOU members should be and the key measures and indicators that can aid AAOU members in determining if they are upholding and practicing the said principle. The debate between equality and equity should also become a point of discussion among AAOU members in order to clarify where the association and individual universities stand. The concordance analysis showed that AAOU members saw equality as a goal, aspiration, and principle. Meanwhile, equity was deemed as a goal and also a challenge to overcome. If the AAOU members opted to strive for equity as part of their worldview and practice, support should be in place in order to ensure that equity can be materialized. Lastly, justice seemed to be an elusive topic in the “About Us” sections of AAOU members’ websites. This should be another point of discussion among AAOU members as open education could be a solution that would address the social injustice that arises out of inequalities in the distribution of access to knowledge.

5. Conclusion
The current study aimed to dissect the academic web genre as exemplified by AAOU members in their respective “About Us” sections. A three-part genre analysis was done. First, the move analysis resonated with the results previously found by scholars who also conducted similar studies of academic web genre. The 12 rhetorical moves used to achieve the communicative purpose of the “About Us” sections also showed the promotional nature of university websites in a manner that was both authoritarian and inclusive (Yang, 2013; Zhang, 2017).

Meanwhile, the keyword analysis revealed the use of words inherent in open and distance education. However, majority of the keywords with positive keyness were also words that characterized both residential and distance education institutions. The use of
words with positive connotations was also contributory to the promotional nature of the academic web genre.

Lastly, the concordance analysis showed the contexts wherein words were used by AAOU members in order to make sense of social realities. It also revealed topics that should be further discussed in order to improve the sense of identities of AAOU members as well as their commitment to provide services that are in line with their academic, research, and public service thrusts. The depth of insights found in the concordance analysis echoed Caiazzo’s (2009, as cited in Yang, 2013) conviction regarding the use of corpus linguistics in the study of university web genre.

In conclusion, the findings from the move analysis and keyword analysis show that the “About Us” sections of the AAOU members’ websites generally serve as the universities’ vehicles for promotion and distinction. However, results of the concordance analysis show diversity in the AAOU member universities’ use of words that are deemed as important trends in the field of open and distance education. This demands continuous discourse among AAOU members to enrich the understanding of these trends in the field. It is suggested that the “About Us” sections of the university websites be used as a platform to not just promote and distinguish the institutions, but also reflect the philosophy of open and distance learning. This is to provide substantial information to stakeholders, many of which are still not cognizant to the values and principles that open and distance institutions subscribe to.

In the future, researchers are also encouraged to conduct case studies of individual university websites, but with the inclusion of all the sections and sub-sections. This would entail the support and participation of data mining professionals who could cull large amounts of electronic texts efficiently via programming. In terms of genre analysis, researchers may also include an examination of multimodality (the different modes used in composing online messages), intertextuality (the relationship among online texts and other parts of the websites), and steps in each rhetorical move of university websites.

A comparison of corpora from open and distance learning institutions and residential universities may also be explored. This will need mining and aggregating electronic texts from both corpora and loading these to an open-sourced text analysis software like Antconc (Anthony, 2017). Achievement of communication purpose should also be determined through evaluation of the university websites and opinion surveys with the target audience. These recommendations as well as the findings of the current study will serve as effective guides to open and distance education institutions in terms of improving and maximizing the impact of their presence online via their university websites.

References

Alfonso, G.J. (2014b), “Open educational resources and massive open online courses”, in Alfonso, G.J. and Garcia, P.G. (Eds), Open and Distance e-learning: Shaping the Future of Teaching and Learning, UP Open University, Los Banos, pp. 101-114.


Genre analysis


(The Appendix follows overleaf.)
### Table A1.
Top 100 Keywords with positive keyness in the “about Us” sections of AAOU members’ websites

<table>
<thead>
<tr>
<th>Rank</th>
<th>Frequency</th>
<th>Keyness</th>
<th>% Diff</th>
<th>Keyword</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>409</td>
<td>+</td>
<td>2,819.79</td>
<td>Open</td>
</tr>
<tr>
<td>11</td>
<td>303</td>
<td>+</td>
<td>2,088.59</td>
<td>International</td>
</tr>
<tr>
<td>14</td>
<td>270</td>
<td>+</td>
<td>1,861.01</td>
<td>Distance</td>
</tr>
<tr>
<td>21</td>
<td>192</td>
<td>+</td>
<td>1,325.2</td>
<td>Quality</td>
</tr>
<tr>
<td>23</td>
<td>189</td>
<td>+</td>
<td>1,302.52</td>
<td>System</td>
</tr>
<tr>
<td>37</td>
<td>149</td>
<td>+</td>
<td>1,026.78</td>
<td>Years</td>
</tr>
<tr>
<td>39</td>
<td>148</td>
<td>+</td>
<td>1,019.89</td>
<td>Time</td>
</tr>
<tr>
<td>44</td>
<td>136</td>
<td>+</td>
<td>937.17</td>
<td>Established</td>
</tr>
<tr>
<td>46</td>
<td>129</td>
<td>+</td>
<td>888.92</td>
<td>Cooperation</td>
</tr>
<tr>
<td>54</td>
<td>110</td>
<td>+</td>
<td>757.97</td>
<td>National</td>
</tr>
<tr>
<td>57</td>
<td>106</td>
<td>+</td>
<td>730.4</td>
<td>New</td>
</tr>
<tr>
<td>59</td>
<td>102</td>
<td>+</td>
<td>702.84</td>
<td>Based</td>
</tr>
<tr>
<td>74</td>
<td>88</td>
<td>+</td>
<td>606.35</td>
<td>Mutual</td>
</tr>
<tr>
<td>79</td>
<td>85</td>
<td>+</td>
<td>585.68</td>
<td>Understanding</td>
</tr>
<tr>
<td>94</td>
<td>79</td>
<td>+</td>
<td>544.33</td>
<td>Various</td>
</tr>
<tr>
<td>105</td>
<td>73</td>
<td>+</td>
<td>502.98</td>
<td>Year</td>
</tr>
<tr>
<td>113</td>
<td>68</td>
<td>+</td>
<td>468.53</td>
<td>Full</td>
</tr>
<tr>
<td>120</td>
<td>66</td>
<td>+</td>
<td>454.75</td>
<td>Number</td>
</tr>
<tr>
<td>123</td>
<td>65</td>
<td>+</td>
<td>447.86</td>
<td>Professional</td>
</tr>
<tr>
<td>3</td>
<td>1267</td>
<td>+</td>
<td>8,748.68</td>
<td>University</td>
</tr>
<tr>
<td>4</td>
<td>780</td>
<td>+</td>
<td>5,381.19</td>
<td>Education</td>
</tr>
<tr>
<td>27</td>
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**Table AI**

**Corresponding author**
Louise S. Villanueva can be contacted at: lsvillanueva@up.edu.ph

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Applying quality tools to improve student retention supporting process: a case study from WOU

PohLean Chuah and PengKeat Lim
School of Business and Administration, Wawasan Open University, George Town, Malaysia

Abstract

Purpose – Student retention is important in the management of any university especially one which is not financially independent. Administrators in such institutions need to investigate ways to improve the retention rate in order to avoid the loss of revenue. One of the methods is to ensure that students are able to follow their study pathway and complete their study on time instead of dropping out. The purpose of this paper is to establish a system that allows the university to monitor the progression of these students and highlight the need for counselling when necessary. It is also hoped that this paper helps to improve the student retention rate using quality analysis tools and add knowledge into factual-based problem-solving methodology.

Design/methodology/approach – This paper is a co-relational study based on secondary data. It is a continuous improvement method adopting the “plan-do-check-action” model. Quality analysis tools adopted are failure modes and effects analysis and process mapping, where both are the quality analysis tools commonly used in solving product design or assembly process issues in manufacturing. Using the case study of Wawasan Open University, the authors will adapt the aforesaid quality analysis tools from design and manufacturing sectors into an open distance learning education design. It is hoped that the identified process facilitates certain functions of the departments of the organisation to be more effective.

Findings – This paper provides a practical approach on the methods to improve the retention rate in a private higher education institute. Stakeholders are more willing to embrace the improvement when there is proper factual analysis to support the plans. A cross-departmental team is formed to brainstorm the various aspects of the process and the potential failure modes. In a resource-constrained environment, prioritisation is important to identify the high-impact problems. It is also important that a mechanism is available to deliver information to the area where decisions and actions can be made. The failure modes are prioritised systematically and the corresponding solutions installed. The end result is a system with the process that reduces interdepartmental inconsistency thus providing students with a clearer visibility of their study pathway so that they can complete their study on time instead of dropping out.

Research limitations/implications – This study is performed within the context of an institute. The generalisation is low. Other researchers are encouraged to explore further.

Practical implications – This paper provides some practical actions for the improvement of student retention in the university. It is hoped that other researchers will be attracted to explore further on using quality analysis tools to solve non-technical problems.

Originality/value – This paper provides a structured problem-solving method in a service-oriented organisation.

Keywords Continuous improvement, FMEA, Student retention, PDCA, Process mapping, Resource constraint

Paper type Case study

1. Introduction

Student retention is an important area that all universities hope to excel at. It contributes towards the revenue of the university by reducing the operating cost to recruit students. Wawasan Open University (WOU) is a non-profit university. Its mission is to provide affordable learning opportunities for all Malaysians. Some students are academically not
qualified for public universities in Malaysia and cannot afford to enrol in private universities that charge higher fees. These students form the largest demographics among the WOU students. To be able to monitor their performances and to provide timely intervention are crucial to keep them in active learning mode so as to enable them to complete their study pathways. WOU has two learning modes: distance learning and full-time study. The data and processes were taken from the full-time learning mode. Nevertheless, it is expected that subsequently a similar approach can be extrapolated to the distance learning mode. This paper intends to systematically apply suitable quality tools to establish a manageable supporting process for these students.

1.1 Problem statement

WOU operates in a resource-constrained environment. Each department focuses on the tasks defined for the department and has been functioning well as such. However, when a student service process involves various departments such as the faculty member, registry, enrolment and information technology departments; the grey areas between departments are often not well addressed. Another issue with cross-department collaboration is the weakness of information sharing. Manually collected data are often stored in a file at the department and failed to be disseminated to the point of decision making. This has caused lapses in services and frustrations among the affected students. Another problem is the poor visibility of weak students thereby allowing these students to fail beyond the redemption point and subsequently drop out from the university. Figure 1 shows the percentage and count of students facing problems in their studies and having the potential of dropping out for the last six semesters in the university. These are the students that the improved process is trying to address.

1.2 Research objectives

This paper aims to apply a scientific quality analysis tool to identify issues and to find solutions in a higher education institute. This will allow the administrator to identify the students facing difficulties and alert the related departments to take action. The solution is a process that pans across departments’ boundary. It is hoped that by the end of the intervention, students’ retention can be improved.

2. Problem-solving method

The method used follows the plan-do-check-action (PDCA) model. This is a four-step iterative management method for continuous improvement. Another name for this method is the Deming Cycle. In this model, several quality analysis tools are applied to analyse the data and to formulate objective solutions.

![Students facing problem in their studies](image_url)
A cross-functional team from the various unidentified departments is established to review the student retention issue. This is to tap into the expertise of the personnel from the different departments of these different functional areas. Process mapping is done to ensure that all members understand the interaction of the various departments in supporting the process. Then, failure mode and effects analysis (FMEA) is used to identify the critical areas that need immediate attention. There are many problems in any organisation. Due to resource constraints, only problems that are critical should draw attention. FMEA is a tool that allows the prioritisation to be objectively done.

2.1 PDCA
Code of Practice for Programme Accreditation published by the Malaysian Qualification Agency (MQA) provides quality assurance guidelines for institutions of higher learning in Malaysia. The agency is asking institutes of higher learning to pursue continuous improvement in their teaching and support processes. Institutes are required to install a plan, do, check and action processes on the nine areas of operations. The guidelines incorporate the essence of PDCA as a continuous improvement method. So it is appropriate that the method is used in this paper (MQA, 2010). Suarez Barraza and Rodriguez-Gonzalez (2015) applied this method to improve the delivery of operations management in the MBA programme. Their research provides empirical evidence of how continuous improvement cycle (PDCA) enables better results in the students who took the subject of operations management in a business school.

2.2 Process mapping
Process mapping is a workflow diagram that projects a series of processes to complete a job. Process mapping allow clearer understanding among the members of a problem-solving team. The source of the problem can be easily pinpointed and an improved process is mapped.

2.3 FMEA
FMEA is a quality analysis tool commonly used for identifying all the possible failures in a design, a manufacturing or assembly process or a product. FMEA is frequently adopted in aerospace and automotive industries due to the mission critical nature of their products. FMEA has the advantage of prioritising action critical to the process. Not all failures are equally important and not all action plans can be implemented in a resource-constrained environment. FMEA helps to prioritise the action to be implemented based on the severity of the problem, probability of the problem occurring and detectability of existing control measure. These parameters are multiplied to form the risk priority number (RPN). The higher the RPN, the more critical is the problem. In a resource-constrained environment, resources should be directed to solve a critical problem with high RPN.

Since FMEA is a new concept among the team members, a clear procedure for the common understanding of the members is warranted. The process of composing the FMEA starts with the process map. Each step in the process map is identified as a check point to be reviewed by the members. Members of the team need to understand the purpose of this step. The potential failures of this step are identified. This is termed a failure mode. That particular step may need to be micro-mapped if found necessary. After that the consequence of each failure is discussed based on what the students had experienced due to the failure. This is called potential effect. The seriousness of the consequence is then recorded, which is the severity rating (S). For each failure mode, the root causes are identified. Occurrence rating (O) is assigned to each root cause. From the occurrence, one estimates the probability of failure occurring. For each root cause, one adds in the current control process. These are procedures and guidelines that are in place to prevent the failures from reaching the students. For each process control, the
detectability rating (D) is determined. This rating estimates how well the controls can detect either the cause or its failure mode after they have happened. The risk priority number, or RPN, which equals $S \times O \times D$ can be calculated. These numbers provide guidance for ranking potential failures in the order that they should be prioritised (Tague, 2004). Those with the highest RPN should be singled out for improvement. The actions taken are captured in the FMEA format too. The RPN after improvement can be calculated and recorded in the same format. A comparison can be made on the effectiveness of the actions taken.

2.4 Literature review

Student retention is a universal problem. There are numerous literatures covering this topic. Many involve using predictive model or data to improve retention. Bearman, et al. (2017) did a study in the Washburn University, Kansas providing evidence that good data analytics and evidence-based practice can improve student retention. One of the initiatives is the creation of a Center for Student Success and Retention. This means that if a university is serious about student retention, resources must be made available to resolve the issue. Similar point is also highlighted by the Hanova Research in 2014 in North America. One key finding is that institutions are concerned over their retention rates, but few allocate the necessary resources to affect long-term change at the institution. Another finding shows the seven variables that affect student retention are academic advising, social connectedness, student involvement, faculty and staff approachability, business procedures, learning experiences and student support services. Effective student support services can have a measurable, significant, positive impact on student retention (Hanova Research, 2014). Another research carried out in South Africa by Prinsloo et al. (2010) found that if students are aware of their risk profile, installing risk awareness intervention can help repeaters to complete their studies. Their study also pointed out that there is no grand theory for successful student retention and the findings are context specific. It means that actions that are good for an institution probably may not work for others. Based on these reviews, it is justified that this paper should be taken as a case study approach in WOU; focussed on using quality analysis tools to establish valid actions that provide value for students.

A resource-constrained organisation refers to an organisation with limitations on staffing, equipment and other resources that are necessary for the successful operation and running of the organisation. A resource-constrained organisation does not necessary means lower performance. In fact, research has shown that small organisation can utilise a close interrelationship and trustworthiness to produce above normal competitive advantage (Jones et al., 2014). The universal fact is that for an organisation to remain competitive; the organisation has to improve the efficiency of the operations and process. While organisations find the identification of improvement projects easy, resource constraints often limit the parallel execution of the projects. That is when prioritisation becomes important. Objective prioritisation is more favourable over subjective one because it is perceived as more scientific. The tools for objective prioritisation include Pareto analysis, project ranking matrix, quality function deployment, cost-benefit analysis, analytical hierarchy process and theory of constraints (Kirkham et al., 2014). FMEA and process mapping are being selected as the tools to carry out prioritisation in this case study because they are relatively easier to scale up and down according to the magnitude of the project.

Most of the articles in FMEA are associated with engineering, design process, supplier selection, material quality, project management and medical emergency (Chanamool and Naenna, 2016; Claxton and Campbell-Allen, 2017; Li and Zeng, 2016). There are relatively fewer articles related to education. Kenchakkanavar and Joshi (2010) applied the tool to improve the quality of engineering education in Bangalore (Kenchakkanavar and Joshi, 2010). Kaushik and Khanduja (2010) used the same tool as part of the Six Sigma improvement in education sector (Kaushik and Khanduja, 2010). Chaudhuri et al. (2013)
combined mathematical modelling and FMEA to analyse the risk in a supply chain. Mathematical model is for identifying vulnerable subsystem and supplier and FMEA is used to identify the potential failure modes associated with the vulnerable suppliers, and subsequently prioritise those failure modes to create control plans for minimising the impact associated with those failure modes. This approach is quite similar with the approach in this paper. In this paper, the processes are assumed to be equivalent to any engineering processes. The failure mode is defined as the unexpected deterioration of the criteria performance (Li and Zeng, 2016). There are also critiques that view FMEA as complex and that there are many subjective opinions that make scientific decision making impossible. As a result, there are many variants of FMEA that tie with the computing logic to make the RPN calculation more scientific (Paciarotti et al., 2014; Boylan, 2009).

There are many research works that apply process mapping to improve operations. The operations are usually information technology projects, supply chain, business process, etc. It is only appropriate that similar approach is adopted in this paper.

3. Results analysis
A process mapping of student enrolment at the start of a semester until release of examination result at the end of the semester is shown in Appendix 1. Both before and after improvement maps are shown. The “before map” shows the problem points and the after map shows the improvement actions. The FMEA is shown in Appendix 2. The following paragraphs demonstrate problem solving according to the RPN number. It starts with the most critical and gradually works down the list according to available resources. Since WOU operates in a resource-constrained environment, the number of manual follow up, multiple approvals and interactions between departments should be kept at the minimum. On the other hand, information should ideally come from a single source and should be shared among the stakeholders. Part of the FMEA is reproduced in Table I to show the areas that required immediate attention.

3.1 Examination result
The examination result of the previous semester is released in the first week of the semester. This is usually the busiest period in the university. The university has to aggressively recruit new students besides administering existing students who pass the examination to reenrol. At this juncture, it is easy for weak students who fail the examination to slip through the re-enrolment because of lack of advices from appropriate parties. Secondary data taken from 2013 to 2016 are shown in Table II. The data clearly show that weak students would further slip into more disadvantageous stages if no proper intervention is given.

A process is installed where probation students or students who fail to achieve CGPA above 2.0 are called upon to meet the lecturers. Each student is paired up with a lecturer as his or her academic advisor (AA). The advisor’s duty is to provide a listening ear, coach the student on proper study technique and help student plan his or her study pathway. The advice given is comprehensive covering how many subjects the weak student is allowed to enrol, when to re-sit a fail paper and the best subject combinations for the student. It is obvious that the advice given has to be uniform across the students. Students will complain if they find out that similar scenarios are given different treatments. To minimise the differences, a meeting is called among the AAs to calibrate the actions taken and to discuss any complex cases. The outcomes provide some certainty to students, and assure registrar that students do not arbitrarily drop or add subjects. As a result, the enrolment process becomes more streamlined.

The guidelines of students under probation are being reviewed too. Previously, the students under Probation 1 are allowed to take similar number of subjects as any other students.
<table>
<thead>
<tr>
<th>Process step</th>
<th>Potential failure model(s)</th>
<th>Potential effect(s) of failure</th>
<th>Severity</th>
<th>Potential cause(s)/mechanism(s) of failure</th>
<th>Probability</th>
<th>Current process controls</th>
<th>Detection</th>
<th>RPN</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam preparation</td>
<td>Student fail to address the requirement</td>
<td>Fail in exam papers</td>
<td>6</td>
<td>Students do not understand key terms in the question</td>
<td>6</td>
<td>Final exam is 60% of the overall assessment</td>
<td>7</td>
<td>252</td>
<td>3</td>
</tr>
<tr>
<td>Exam result release</td>
<td>Student fail selected papers or students score low grades</td>
<td>Students unable to progress according to standard study pathway</td>
<td>7</td>
<td>Students are not well versed with the procedures and the avenues for resolutions</td>
<td>6</td>
<td>RC, Registry, Programme Coordinator and lecturer individually carry out his/her task. Lack of coordinated process cause frustration among students</td>
<td>7</td>
<td>294</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Students unable to progress according to standard study pathway</td>
<td>Students may have psychological issue</td>
<td>7</td>
<td>No control, lecturers are inadequate to address the issue. Lecturer has conflict of interest if double up as student counsellor</td>
<td>8</td>
<td>Manual attendance taking. Feedback by lecturer</td>
<td>7</td>
<td>392</td>
<td>1</td>
</tr>
<tr>
<td>Student class attendance</td>
<td>Unable to detect students poor attendance</td>
<td>Student absence &gt; 25%</td>
<td>6</td>
<td>Lack of means to detect student attendance</td>
<td>6</td>
<td></td>
<td>7</td>
<td>252</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 1. Part of the FMEA that rank actionable areas.
Ever since the statistics in Table II is known, the guidelines are revised so that students under Probation 1 take fewer subjects to prevent them from further slipping into Probation 2 and to improve the survival rate. Since this guideline has just implemented in May 2017, one academic cycle is required to show its effectiveness.

Within the initiative of outcome-based education initiated by Malaysian Ministry of Higher Education, there are many forms of assessment. The type of assessment chosen by the lecturer should match the learning outcome to be achieved. The intention is to lower the percentage allocated to final examination and more to continuous and formative assessments. The objective is to allow proper intervention when weak students fail formative assessment. The assessment system in WOU was skewed towards final examination, tagged at 60 per cent of the overall assessment. The remaining 40 per cent was for formative and continuous assessments. In September 2016, more freedom was given to the lecturer to choose appropriate assessment allocation for their courses. The percentage for final examination was reduced to 50 per cent at February 2017. Table III shows the number of courses with no final examination before and after improvement. There is certainly room for improvement.

### 3.2 Class attendance
Class attendance is another indicator that allows the university to detect weak students. Weak students habitually cut classes. When attendance is taken manually, lecturers hold the extra duty to monitor the students. They either take action against these students or inform the administrator of any abnormal incidents for further action. Sometimes parents or study grant providers have to wait longer than necessary to understand the performances of their children or beneficiaries.

After the team has brainstormed, an online attendance system was introduced in September, 2016. Lecturers, the deans, registrar and examination office can acquire the attendance rate of each student online. While previously lecturers have to manually tabulate the attendance rate, the online version tabulates the summarised data instantly. Thus, more time can be spent on the actions rather than preparing the data. The various stakeholders as mentioned above share similar data on the student which means action taken are more homogenous. Students can look up their attendance rates from the student portal and take necessary actions to improve their attendance rates.

### 3.3 Counselling record
Examination result release and re-enrolment for weak students have to be done within seven days. This is a rather short period. AA needs to understand the situation of the students and calibrate the advice given. Then students have to arrange with their AAs for

<table>
<thead>
<tr>
<th>Table II. Status</th>
<th>Headcount (September 2013 to September 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of students entered Probation 1</td>
<td>51</td>
</tr>
<tr>
<td>No. of students further entered into Probation 2</td>
<td>28</td>
</tr>
<tr>
<td>No. of students dropped out after Probation 1</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table III. No. of final examination</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Percentage</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>
counselling sessions. Service centre and registry have to re-enrol the students based on the outcomes of counselling. This means information sharing among the various stakeholders is important. Previously, AA has to manually fill up counselling forms and copies were distributed to the other two departments. This created a time lapse and miscommunication issues were frequent. An online counselling was added in February 2017. AA is responsible to key in the outcomes of counselling he or she have done with the student. The programme coordinator check that the suggested actions are valid and standardised among the different AAs. The information is then released to the service centre and registry for accurate re-enrolment. The information is also released into the student portal for the student to implement the needful actions.

A side advantage from this information sharing is that it allows supporting functions to pull out a student history in order to map out a more effective study approach for the student. Gone are the days where physical records were kept in the students’ personal folders without being used as a valuable information source.

3.4 Outcome of the changes
After discussing the changes that have been implemented, it is time to review the results of the effort. Figure 1 that shows the number of students facing problems is plotted again by adding data for May 2017 as shown in Figure 2. It clearly shows that the number of drop out is reduced as the line chart flattens after September 2016.

3.5 Limitations
A number of articles have discussed about the shortcomings of FMEA. The RPN calculation depends on human experience and is not considered a good instrument of measurement (Boylan, 2009; Paciarotti et al., 2014). The Severity, Occurrence and Detection index that have been established are more suitable for product rather than service. Nevertheless, the method is well-established to resolve the engineering issues and should be capable enough to resolve some management process issues. With the formation of a team comprising experts from different functional areas, it is believed that it should be able to resolve some of the management process issues.

The data are taken from a smaller sector in the institution. Actions taken have to be confirmed before being extrapolated to the larger sector.

FMEA is a new tool among the members of the team. It is clear that they are not comfortable with the application yet.

3.6 Institutionalise good practises to other area
Student retention is a universal problem. There are so many papers devoted to the topic; it shows that there is no single solution that fits all. The findings gained from this research add to the knowledge in this field. There are other perspectives to look at such as improving
student numbers, student enrolment process or the quality of teaching and learning. These could be future research opportunities.

There are many similarities between distance learning and full-time study. Among the actions that have already been implemented for the full-time mode, class attendance is the least relevant for distance learning. Attending class is not compulsory in the distance learning mode. However, since WOU provides comprehensive discussion classes, weak students should seize the opportunities to attend as many classes as possible. The tutors will be able to monitor their study and provide timely support.

4. Conclusion
Continuous improvement is a never-ending process. PDCA is a good method to institute continuous improvement in an organisation. FMEA and process mapping are tools that can provide scientific analysis to implement improvement action plans. The FMEA should not stop here. It has to be continually updated to capture more critical areas for improvement. Action plans that have been implemented have to be monitored for effectiveness and sustainability. There is opportunity to standardise and institutionalise good practices to other areas.

Glossary
AA Academic advisor
CGPA Cumulative grade point average
FMEA Failure modes and effects analysis
RC Regional center
RPN Risk priority number (Severity × Occurrence × Detection)
WOU Wawasan Open University

References
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Hanova Research (2014), Strategies for Improving Student Retention, Hanova Research, Washington, DC.


MQA (2010), Code of Practice for Programme Accreditation (COPPA), Malaysian Qualifications Agency (MQA), Kuala Lumpur.


(The Appendices follow overleaf.)
Appendix 1. Process mapping of student enrolment until the release of examination results

Before

<table>
<thead>
<tr>
<th>Process</th>
<th>Support Activities</th>
<th>Problems that need attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student enrolment</td>
<td>Student pick subjects from the study pathway, pay the fees at service centre. Manual registration process. Registry check the enrolment meets guidelines</td>
<td></td>
</tr>
<tr>
<td>Student attend class</td>
<td>Students attend classes. Manually monitor attendance rate, coursework results</td>
<td>Low attendance percentage escape detection</td>
</tr>
<tr>
<td>Student sit for exam</td>
<td>Students sit for exam</td>
<td>Final exam is 60%</td>
</tr>
<tr>
<td>Result release</td>
<td>Exam result is released, CGPA?</td>
<td>The time between results release and re-enrolment deadline is about 7 days, which is short. Weak students are not sure which subjects to enrol for the semester</td>
</tr>
<tr>
<td>Normal re-enrolment</td>
<td>Pass students continue normal re-enrolment</td>
<td></td>
</tr>
<tr>
<td>Special re-enrolment</td>
<td>Weak students need help to decide on next step</td>
<td>Students need advice from the academic advisors. Service centre and registry need AA instruction to enrol the students. Information transmission among the stakeholders is poor</td>
</tr>
<tr>
<td>End</td>
<td>Weak students re-enrol, sign up for resit paper</td>
<td>Registry check enrolment is correct</td>
</tr>
</tbody>
</table>
After Student pick subjects from the study pathway, pay the fees at service centre. Manual registration process. Registry check the enrolment meets guidelines.

<table>
<thead>
<tr>
<th>Process</th>
<th>Support Activities</th>
<th>Added support activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student enrolment</td>
<td>Student attend classes. Monitor attendance rate, coursework results. Weak students are identified for extra advice</td>
<td>Online attendance taking. Analyse attendance data to identify weak students for counselling</td>
</tr>
<tr>
<td>Student attend class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student sit for exam</td>
<td>Students sit for exam. Final exam is 50% or 0%</td>
<td></td>
</tr>
<tr>
<td>Result release</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass/Fail</td>
<td>Exam result is released, CGPA?</td>
<td>Improve the probation guidelines to prevent students from slipping into more disadvantageous stage</td>
</tr>
<tr>
<td>Pass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal re-enrolment</td>
<td>Pass students continue normal re-enrolment</td>
<td></td>
</tr>
<tr>
<td>Special re-enrolment</td>
<td>Weak students need counselling to help decide next step</td>
<td>Added AA calibration meeting to standardise the advice given to students. Added online counselling to share the information among the stakeholders</td>
</tr>
<tr>
<td>End</td>
<td>Weak students re-enrol, sign up for resit paper. Registry check enrolment is correct</td>
<td></td>
</tr>
</tbody>
</table>

---

**Applying quality tools**

[Diagram of process flow]
## Appendix 2. FMEA

<table>
<thead>
<tr>
<th>Process Stage</th>
<th>Potential Failure Modes</th>
<th>Potential Effect(s) of Failure</th>
<th>Likelihood of Occurrence</th>
<th>Causation</th>
<th>Current Process Controls</th>
<th>P</th>
<th>F</th>
<th>N</th>
<th>Recommended Actions</th>
<th>Responsibility &amp; Target Completion Date</th>
<th>Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student class attendance</td>
<td>Unable to detect student attendance</td>
<td>Student absenteeism</td>
<td>2-3%</td>
<td>Manual attendance taking, feedback by advisor</td>
<td>7</td>
<td>25</td>
<td>Reestablish online class attendance database</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam preparation</td>
<td>Student fails to address the requirement</td>
<td>Fail in exam papers</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam result release</td>
<td>Student fails to submit papers or students exceed the guideline</td>
<td>Students unable to progress according to the annual study pathway</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Group reporting as a tool to enhance the quality of courses
The response of database students to online cooperative learning

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University of the Philippines Open University, Los Baños, The Philippines

Abstract

Purpose – Group reporting, a form of cooperative learning, is a learning tool often employed in residential teaching to facilitate quality learning. Like other cooperative learning methods, it enhances learning in classrooms by allowing students work on activities in small groups to receive rewards based on their group’s performance. However, though group reporting is often done in face-to-face settings, few up-to-date literature has shown its application in online learning. Moreover, the question as to whether online cooperative learning through group reports yields positive or negative response from students has to be studied further. The paper aims to discuss these issues.

Design/methodology/approach – This study focuses on the students’ response to the group reporting activity carried throughout one semester. A course offered by the University of the Philippines Open University on database management systems made use of group reporting to add to the students’ learning experience. Group meetings along with regular online lectures were carried out during the first half of the semester. The output group reports were then presented during the second half and served as the main resource for those weeks’ study modules. An online survey with Likert scales drawing out the student reactions on the learning activity impact was administered to volunteer respondents at the end of classes.

Findings – In total, 71.9 percent of 32 respondents observed changes in their behavior after using peer and cooperative learning technologies. The respondents also indicated that they enjoyed the group reporting activity (14 agreeing strongly, 14 agreeing moderately). They also indicated that they were motivated to learn the course through the group reports (8 agreeing strongly, 14 agreeing moderately). However, when asked if they preferred to have all the modules in group report format 9 agreed moderately, 8 disagreed moderately, 7 disagreed strongly, 4 agreed strongly, and 4 neither agreed nor disagreed. Still, overall, online cooperative learning facilitated quality learning based on this study’s results.

Originality/value – This study contributes to the body of knowledge by showing how group reporting can be applied online and how students have responded to it. The study also provides recommendations on how to conduct online cooperative learning in order to enhance the quality of courses, with implications for further research to look into variations with respect to the technology used for reporting and its suitability to a given course.

Keywords Online learning, Cooperative learning, Group reports, Quality assurance in ODE, Open and distance education (ODE), Open pedagogies

Paper type Research paper

1. Introduction

Cooperative learning has had a substantial revival in educational research and practice in recent years. It is a technique wherein students work on learning activities in small groups and receive rewards based on their group’s performance (Slavin, 1980). This type of learning is hinged on a learning theory called connectivism. Connectivism is a learning theory which moves the power in education away from individuals such as instructors and single learners...
onto a collective group. Although individual work still exists in connectivism, this learning theory focuses on the network and connections rather than individuals (Siemens, 2005). The more benefit learners could gain from connections with other learners, the more a course needs to make use of connectivism (Crosslin, 2016).

Connectivism makes use of learner-learner interactions. Moore and Kearsley identified three interactions in distance education: learner-content interaction, learner-instructor interaction, and learner-learner interaction. Of the three, learner-learner interaction “is a relatively new dimension for teachers in distance education.” Learner-learner interaction can be interaction between groups with students meeting face to face and it can be interaction where the individuals only meet in online settings. Students generally find interaction with their peers to be motivating. Course designers are recommended to use real or virtual groups to generate content, especially when students can be grouped to make presentations for their peers (Moore and Kearsley, 2012).

Cooperative learning in the form of group reports allows such groupings and presentations to take place. Aside from the benefits arising from it being a learner-learner type of interaction, cooperative learning is also beneficial because it combines and promotes both academic and social skills, in addition to being useful in culturally diverse classrooms. Cooperative learning gives students the chance to learn in an environment that is dynamic and creative growing out of the interaction of diverse backgrounds, interests, experiences, and ideas (Sharan, 2010). The cooperative learning mode provides a gender-friendly pattern that can empower students to have democratic values and behaviors needed for peaceful coexistence and sustainable development (Esiobu, 2011).

Using Jigsaw model of cooperative learning wherein a whole class can be divided into groups with four to six members with each group having diversity in terms of gender, race, ethnicity, and ability, a study was conducted to determine this strategy’s effect in promoting insightful learning of junior intermediate students in mathematics (Suresh and Reddy, 2017). The findings showed that the group of students who were assigned to the Jigsaw cooperative learning technique performed significantly better than those in taught using conventional methods. In addition, the performance of male and female students was also better when Jigsaw cooperative learning was done. Not only that, “Above average,” “Average” and “Below Average Students” who were part of the Jigsaw groups but also achieved significantly higher scores than counterparts who were taught conventionally.

Encouraging students to learn cooperatively will not only support their academic success but will also equip them for lifelong learning as well (Skalicky and Brown, 2009). In addition, students have also found the cooperative learning approach to be helpful in developing generic skills for their future careers (Ballantine and Larres, 2007).

Cooperative learning has also been found to enhance the quality of courses and students’ classroom experiences. Experiences of college students were compared during cooperative learning and large-group instruction and the overall quality of experiences was greater in cooperative learning. Different levels were taken into consideration but the research works reported that, “the quality of experience did not differ across instructional contexts for high- vs low-achieving students” (Peterson and Miller, 2010).

However, despite the potential benefits of cooperative learning at universities, implementing it is challenging (Buchs et al., 2015). This holds not only in residential teaching but also for online teaching, where the literature for this is few.

Review of online cooperative learning studies resulted in the literature such as the following: one study had looked into the impact of online synchronous audio and video systems on the decision making and intellectual tasks of students who were engaged in cooperative learning (Chen et al., 2006). Another looked into developing a system that enables teams to allocate project tasks and create ground rules, acting as a support for learners conducting virtual team working (Whatley, 2006). One also looked at how online
small groups can be created online and how their work practices and identities in turn develop (Goggins et al., 2011). A more recent study, although focused on online collaborative learning, investigated the perspective of learners about how an ICT support system could facilitate peer interaction in the bachelor’s and master’s thesis process (Aghaee and Keller, 2016). In 2017, a study examined the effects of learner-learner interactions on satisfaction and learning in an online undergraduate course and found that “learner-learner interaction has a significant effect on students’ achievement in an online course” (Kurucay and Inan, 2017).

The literature such as these provide respectable information. However, cooperative learning is constantly evolving with new models and procedures added all the time (Sharan, 2010). Thus, there is a need to conduct more up-to-date studies on how to conduct online cooperative learning so that educators can implement it especially as avenues for online learning continue to change. Moreover, since student perceptions of this type of learning provide a vital source for identifying necessary methods on how it can be carried out (Sharan, 2010), studies determining student response to online cooperative learning are necessary.

1.1 Background
Group reporting is a form of cooperative learning. Here, students are responsible for their own learning and for helping others learn. As a form of cooperative learning technique, it maximizes on the diversity of the people who are part of the group to foster dynamic and creative learning. In the University of the Philippines Open University (UPOU), a course on database management systems (CMSC 206) includes a mix of students who are either taking up diploma in computer science or masters in information systems. The mix includes students who are learning about databases for the first time, those who are experts in databases and are using them daily in their occupations, and those who are in between. Because of this diversity, group reporting was included in the course’s learning activities to enhance the students’ learning experience. CMSC 206 classes, however, are conducted purely online. Students are often based in different parts of the Philippines as well as abroad and there are no face-to-face classes for this course.

1.2 Statement of the problem
Few literature have shown how cooperative learning in the form of group reporting is done online. Moreover, the question on what the responses of students are to online cooperative learning need to be studied further. This research paper focuses on determining students’ response to cooperative learning done online.

1.3 Objectives
This study has the following objectives:

(1) to identify the response of CMSC 206 students to online cooperative learning;

(2) to determine if there were changes in behavior after the cooperative learning activities; and

(3) to draw out from the students their observations about their behavior change.

2. Research design and methods
2.1 Online classroom setup
A semester in UPOU consists of 14 weeks. For CMSC 206, as taught in the first semester of 2016-2017, the first six weeks consisted of the faculty in charge (FIC) providing relevant resources and materials for modules on fundamental database concepts, database models, basic DBMS functions, transaction processing and concurrency control, and database
integrity and crash recovery. The next seven weeks then consisted of online group reports wherein groups consisting of nine to ten students presented topics on conceptual design, logical design, normalization, relational algebra, SQL queries, software system design, and database trends in the form of vlogs, screencasts, video animations and the like. These group reports served as the main resources for those weeks (i.e. Weeks 7-13). The online final exam was then held during the final week.

2.2 Group reporting guide

The students were given a group reporting guide at the beginning of the semester as instructions for the activity. The guide contained the groupings. Here, the students were grouped into seven groups with each group assigned to be a module topic to be reported from Weeks 7-13:

1. Group 1 – “Conceptual Design” to be released as a resource on Week 7.
2. Group 2 – “Logical Design” to be released as a resource on Week 8.
3. Group 3 – “Normalization” to be released as a resource on Week 9.
4. Group 4 – “Relational Algebra” to be released as a resource on Week 10.
5. Group 5 – “SQL Queries” to be released as a resource on Week 11.
6. Group 6 – “Software System Design” to be released as a resource on Week 12.
7. Group 7 – “Database Trends” to be released as a resource on Week 13.

The students were instructed to conduct group meetings using technologies of their choice by Week 2, several weeks before the first group reporting date. They were given the freedom not only to meet virtually through e-mail, Moodle, VoIP, or through their social networking sites, but they could also meet face to face in order to create their group reports. Group reports were to be presented in a form of a video or playlist uploaded online. The students had the freedom to create a vlog, a screencast, a video animation or anything that would meet the following criteria: content (50 percent); clarity (30 percent); and creativity and appeal (20 percent). Content would be assessed by the FIC, and clarity and creativity would be assessed by their peers. The total points for the group reporting activity would make comprise 20 percent of their final grade.

Each group was required to submit their output to the FIC one week before the topic was scheduled to be discussed in class so that their output videos could shown as the main reference in the course site during the week assigned to them.

2.3 Group membership

Each group had nine to ten members. The students were grouped according to the location they indicated in their profiles and, as much as possible, the groups contained students who specified the same location. However, there were a lot of offshore students and students who resided in different regions in the Philippines. Thus, most groups still had members who were spatially distant from each other.

2.4 Actual group meetings and group reports

The students were able to contact their groupmates upon the release of the groupings. They then conducted the group meetings as instructed using the technologies of their choice. Group meetings ran in parallel with their lessons for Weeks 1-6 until the group reports finally commenced in Week 7. Each group was able to submit their reports at least a week before the reporting date and the FIC was able to post these reports as the main resources for each corresponding week. Discussion questions based on the submitted reports were also posted in each week’s discussion forums.
2.5 Online questionnaires and analysis of data gathered

Online questionnaires were then distributed to the students at the end of the semester. This method of data collection was chosen taking into consideration the different locations of the students enrolled in the class.

The survey was voluntary and taking part in it did not affect their grades in any way. However, since the survey was not compulsory, there was a limitation in terms of the number of respondents. Of the 64 students who initially enrolled in the course, 57 remained active. This means that these 57 did not drop the course formally or informally. In total, 32 of 57 active students took part in the online survey (56 percent of the remaining population).

The questionnaire was divided into six parts: student demographics, technologies used, peer learning assessment, cooperative and collaborative learning assessment, overall evaluation, and comments and suggestions for CMSC 206. This research paper focuses on parts 1, 3, 4, and 5 of the questionnaire administered.

These were the questions asked for part 1 of the online questionnaire:

1. Gender (please choose only one):
   - Male.
   - Female.

2. Degree being pursued (please choose only one):
   - Diploma in computer science (DCS).
   - Master of information systems (MIS).
   - Other.

3. Age group (please choose only one):
   - Below 20 years.
   - 21-30 years.
   - 31-40 years.
   - 41-50 years.
   - 51-60 years.
   - Above 60 years.

4. What country do you reside in?

5. What group did you belong to? (Please choose only one):
   - Group 1: conceptual design.
   - Group 2: logical design.
   - Group 3: normalization.
   - Group 4: relational algebra.
   - Group 5: SQL queries.
   - Group 6: software system design.
   - Group 7: database trends.
   - Other.
For parts 3, 4, and 5 these were the questions asked:

(1) Peer learning assessment:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
  - the technologies I identified helped me learn from my peers;
  - the technologies I identified enabled me to share what I know with my peers;
  - learning from my peers (through these technologies) contributed positively to my learning experience;
  - I would have performed the same way or better if I worked in this course alone*; and
  - interacting with my peers and sharing my work with them was difficult*.

(2) Cooperative and collaborative learning assessment:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
  - learning as a team enabled us to learn more about this course than learning alone;
  - the technologies we have used made it easier for us to collaborate;
  - the technologies we have used allowed us to accomplish our tasks quickly;
  - the technologies for collaboration made it more difficult for us to accomplish our tasks*;
  - we were able to accomplish more via face-to-face meetings than using the technologies*;
  - in accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face-to-face conversations*;
  - having YouTube video presentations together allowed us to learn the course concepts more effectively; and
  - after taking this course I can see a positive impact in my behavior in terms of collaboration and cooperation in the work place.

(3) Overall evaluation:

- Please evaluate each sentence as how you agree/relate with them personally. Please avoid answering (3) as much as possible. Only answer it if you truly do not have a stance in the statement:
  - I liked and enjoyed the group reporting activity in this course;
  - I preferred to have all modules in group report format; and
  - I was motivated to learn the course through the group reports.

- Were there changes in your behavior after using peer and cooperative learning technologies? (Yes/No)

- If your answer was yes, please state your observations. If your answer was no, please state why.
The questions for parts 3, 4, and 5 were based on an earlier survey (Figueroa et al., 2015) for peer and cooperative learning among distance learners in academic and private-public partnership initiatives. These were the parts adapted from Figueroa’s questionnaire: Likert statements for “Peer Learning”; Likert statements for “Collaborative and Cooperative Learning in IS 272”; and the first part of “Perceived Behavior and Organizational Impact.” Certain words (e.g. mentions of IS 272 and target organizations) were omitted from questions and were slightly modified to fit into the study’s context. However, the thought and order of the Likert statements remained intact. The questions were then passed to a panel of online education experts who confirmed the face validity of each item.

Statements with an asterisk were negatively worded and had to be normalized during the analysis and interpretation stage.

The consolidated responses were analyzed by taking the Cronbach’s α to test for reliability. The percent agree methodology was then used to determine the students’ overall response to the online cooperative activity. The frequency of those who stated “strongly agree” and “moderately agree” were summed then divided by the total to determine the percent who agreed to the Likert statements. This was also done for the frequency of those who stated “strongly disagree” or “moderately disagree” to get the percent who disagreed. Neutral responses were simply divided by the total. As for the qualitative data gathered as responses to the question relating to observations in their change or lack of change in behavior after using peer and cooperative learning technologies, thematic coding analysis was used.

3. Results

In total, 32 of the 57 active students who took up CMSC 206 in the first semester of the academic year 2016-2017 participated in the online survey administered at the end of the course. The demographics of the participants are shown in Figures 1-5.

There were 19 female respondents (59.4 percent) and 13 male respondents (40.6 percent). In total, 19 (59.4 percent) were taking up master of information systems and 13 (40.6 percent) were taking up diploma in computer science. CMSC 206 is a core subject of DCS and an elective of MIS. In total, 50 percent (16 respondents) were 21-30 years old. In total, 34 percent

![Gender of Participants](image-url)
(11 respondents) were 31-40, 13 percent (4 respondents) were 41-50, and 3 percent (1 respondent) was 51-60 years old. None of the respondents were below 20 years nor above 60 years.

As for the participants’ location, the questionnaire only gathered the country where the participants resided in. In total, 24 were staying the Philippines, 3 in Singapore, and 1 each in Australia, Oman, the USA, Bahrain, and Nigeria.
The respondents comprised of four members from Group 1, 5 from Group 2, 4 from Group 3, 5 from Group 4, 7 from Group 5, 2 from Group 6, and 4 from Group 7.

These demographics show that the survey was able to gather results from almost equal number of males and females, thus giving little partiality to results in terms of gender. It was also able to gather results from almost equal number of master of information systems and diploma in computer science students, thus representing the two different levels of expertise in terms of degree being pursued. Most of the respondents were between the ages 21 and 40 implying this study’s results could be relevant to Millennials (i.e. those born between 1996 and 1981).

The geographical data show that the respondents were indeed spatially distant from each other, though the cities of those who answered “Philippines” were not indicated.

As for the groupings, the survey was able to gather results from representatives of all seven groups.

3.1 **Peer and cooperative learning results**

Table I shows the agreement table of the consolidated responses to the Likert statements of parts 3, 4, and 5 of the administered online survey. Statements 1-5 comprise “Peer Learning Assessment” and statements 6-13 comprise the “Cooperative and Collaborative Learning Assessment” group. Statements 14-16 make up the “Overall Evaluation” portion.

More participants answered “moderately agree” and “strongly agree” compared to the other choices, indicating favorable responses to peer and cooperative learning through the technologies used. To interpret these ratings further, the percent agree scores were computed. The statements with an asterisk were those in negative wording and the
frequency of “strongly disagree” and “moderately disagree” was computed for the percent agree scores and “strongly agree” and “moderately agree” for percent disagree. Figure 6 shows the percent agree-disagree chart of participants’ response to survey questions.

Looking at the general percent agree scores, only two statements had a percent agree score lower than 50 percent. In the statement "In accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face-to-face conversations*,” the 47 percent score meant only 47 percent able to connect more conveniently using online technologies as compared to the offline ones mentioned. In the statement wherein they are asked if they preferred to have all the modules in group report format, only 41 percent agreed. Nine agreed moderately, eight disagreed moderately, seven disagreed strongly, four agreed strongly, and four neither agreed nor disagreed. It is unclear whether the students preferred just to have the seven modules in group report format as was done throughout the semester, or if they preferred to have some, or none at all. The statement could be worded better or a follow-up question on how many modules should be done in group report format could be asked.

Table I.
 Agreement table for survey questions on peer, cooperative, and collaborative learning

<table>
<thead>
<tr>
<th>No.</th>
<th>Statements evaluated (Likert statements)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The technologies I identified helped me learn from my peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The technologies I identified enabled me to share what I know with my peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Learning from my peers (through these technologies) contributed positively to my learning experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I would have performed the same way or better if I worked in this course alone*</td>
<td>10</td>
<td>13</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Interacting with my peers and sharing my work with them was difficult*</td>
<td>17</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Learning as a team enabled us to learn more about this course than learning alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The technologies we have used made it easier for us to collaborate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The technologies we have used allowed us to accomplish our tasks quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The technologies for collaboration made it more difficult for us to accomplish our tasks*</td>
<td>17</td>
<td>10</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>We were able to accomplish more via face-to-face meetings than using the technologies*</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>In accomplishing tasks, we were able to communicate with each other more conveniently through SMS, phone calls, and face-to-face conversations*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Having YouTube video presentations together allowed us to learn the course concepts more effectively</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>13</td>
<td>After taking this course I can see a positive impact in my behavior in terms of collaboration and cooperation in the work place</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I liked and enjoyed the group reporting activity in this course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I preferred to have all modules in group report format</td>
<td>7</td>
<td>8</td>
<td>4</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>I was motivated to learn the course through the group reports</td>
<td>0</td>
<td>7</td>
<td>3</td>
<td>14</td>
<td>8</td>
</tr>
</tbody>
</table>

Figure 6.
Percent agree-disagree chart of participants’ response to survey questions
The rest of the statements (14 of 16 or 87.5 percent) had the majority agreeing as the percent agree scores were higher than 50 percent again showing that the students responded favorably to peer and cooperative learning. Seven of those statements had percent agree scores above 90 percent. These are shown in Table II.

These seven statements gathered the most favorable responses from the students. As a clarification, the technologies being referred to in the statements above were those which the participants identified as those used in their meetings and group reports (parts 1 and 2 of the online survey). Thus, based on these high responses, the activity allowed the students to learn from their peers and share what they knew easily, facilitated by the technologies used. They had a positive learning experience. Learning as a team helped them learn more and technology made collaboration faster and easier. Not only that, having YouTube video presentations together facilitated more effective learning. In addition, many of them found that interacting and sharing with their peers was not difficult (i.e. it was easy) as implied by the reworded Statement 5.

As for the “Overall Evaluation” section, 88 percent of the respondents had indicated that they enjoyed the group reporting activity. In total, 69 percent indicated that they were motivated to learn the course through the group reports. These indicate a positive evaluation though only 41 percent agreed to having all the modules in group reporting format.

Yet on the whole, the scores thus indicate that the participants found online cooperative learning to be agreeable.

Regarding the questionnaire’s reliability, the responses for those 16 Likert statements had a Cronbach’s $\alpha$ coefficient of 0.88 (good) indicating that the questions were reliable. The questionnaire’s face validity was also confirmed by a panel of online education experts.

### 3.2 Behavior results

When asked if there were changes in their behavior after using peer and cooperative learning technologies, 72 percent (23 participants) responded yes while 28 percent (9 participants) responded no as seen in Figure 7. Table III shows the participants’ observations on their changes in behavior copied in verbatim save for some minor grammatical edits.

The answers consolidated in the table show that many of the behavior changes were positive though there were some who did not experience any behavior change. Those who did not experience a positive change generally said no because the experience was not new or was not long enough to create a change.

However, those who experienced positive behavior changes outnumbered those who had none. Through thematic coding, most answers pointed out that they were able to experience improved personal dispositions, ways of thinking, social interactions, personal and group responsibility, and improved technological proficiency.

<table>
<thead>
<tr>
<th>No.</th>
<th>Statements evaluated (Likert statements)</th>
<th>Percent agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The technologies I identified helped me learn from my peers</td>
<td>93.75</td>
</tr>
<tr>
<td>2</td>
<td>The technologies I identified enabled me to share what I know with my peers</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>Learning from my peers (through these technologies) contributed positively to my learning experience</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>Interacting with my peers and sharing my work with them was difficult*</td>
<td>90.63 disagreed</td>
</tr>
<tr>
<td>6</td>
<td>Learning as a team enabled us to learn more about this course than learning alone</td>
<td>96.875</td>
</tr>
<tr>
<td>7</td>
<td>The technologies we have used made it easier for us to collaborate</td>
<td>96.875</td>
</tr>
<tr>
<td>8</td>
<td>The technologies we have used allowed us to accomplish our tasks quickly</td>
<td>96.875</td>
</tr>
<tr>
<td>12</td>
<td>Having YouTube video presentations together allowed us to learn the course concepts more effectively</td>
<td>93.75</td>
</tr>
</tbody>
</table>

Table II. Likert statements with more than 90 percent participants agreeing
4. Conclusions and recommendations

The results of this study show that the CMSC 206 participants agree to online cooperative learning, their response toward this activity being positive.

For their overall evaluation, 88 percent of the respondents had indicated that they enjoyed the group reporting activity. In total, 69 percent indicated that they were motivated to learn the course through the group reports. However, when asked if they preferred to have all the modules in group report format, only 41 percent agreed. Nine agreed moderately, eight disagreed moderately, seven disagreed strongly, four agreed strongly, and four neither agreed nor disagreed. It is unclear whether the students preferred just to have the seven modules in group report format as was done throughout the semester, or if they preferred to have some, or none at all. Still, overall, online cooperative learning facilitated quality learning based on this study’s results.

Moreover, 71.9 percent of 32 respondents observed changes in their behavior after using peer and cooperative learning technologies and the majority of their behavior changes were positive. There were positive changes particularly improved personal dispositions, ways of thinking, social interactions, personal and group responsibility, and improved technological proficiency.

Online cooperative learning through group reports thus facilitated quality learning based on this study’s results.

This study therefore recommends that group reporting activities be integrated in online courses since students respond positively to it. Overall, students enjoy the activity, are motivated to learn through it, and have experienced positive behavior changes. Online learning practitioners can follow the method outlined in this paper, improving where they deem necessary.

Further studies can be done to determine how much or how less of the course should be done in group reporting format. In addition, studies can be done to determine links between the diversity within groups to their response and performance. Students can explicitly state
Using peer and cooperative learning technologies helped me become more of a “people-oriented” person, as I have to broaden my understanding about others and work with them harmoniously so we can accomplish our tasks. It made me somewhat more interactive and added a sense of more involvement for me rather than solo reading and studying. I learned to take more initiative and learned to ask my peers about things I do not know about. It made me more responsive to my (groupmates) given that we cannot meet face to face and do my best to explain my report via audio visuals. Not a change in behavior, per se, but I gained some additional skills since I don’t normally do video-editing outside this course.

My mindset changed that collaboration for school activity is feasible given the opportunity and was able to know my classmates besides their names. Given that this is an online education and there is tremendous gap among the students, truly those technologies are great tool for collaboration. I am glad that I experienced to use Skype calls in a collaborative manner. Also I was very challenged (since) my groupmates are so active (giving so much ideas and sharing a lot) in doing our group projects. I observe that by using peer and cooperative learning technologies, distance learning (has) no distance at all. I learned to finish things way ahead of schedule in order for the group leader to compile all our works into one presentation. I felt relieved that I was not alone having difficulties with new technologies.

My respect for my other classmates was increased, especially to those who took extra effort to make the group project a success. Group reporting in online education is very difficult to (achieve) with a one hundred percent result since not everyone will be present on the scheduled meetings plus you cannot see the “real” reactions and emotions of your groupmates especially when there are conflicts in the agenda or intended output. Nevertheless, we were still able to (achieve) a positive result even though there was limited time for most of us. I appreciated peer and cooperative learning technique. I liked how the course was structured which was a mix of teacher-student learning and the next half as group reporting. It was well structured and I learned a lot using this teaching method.

There is an (exchange) of ideas, and I have learned new technologies from my groupmates when we discussed about how to come up with the presentation. I was able to manage my time because of the deadline. Patience in manipulating the technology used in our group report (Videoscribe) as I am new to it, and patience with my group members, as there are members who were not able to meet the deadline set by the group. I feel more challenged and more responsible in terms of accomplishing the assigned task to me. I also become much inspired and able to work and study easily through the cooperative learning. I learned a lot from my from group more specifically the technology we used in accomplishing our group report because it is new to me and I can use it in the future. I felt more comfortable and confident in socializing with other people.

It made me realize that participation is needed and reading through their replies on the discussion forum opened my eyes on a lot of things that I do not know before. The method forced me to do time management and (avoid) procrastination. Yes, that each and (everyone) has (his) own way of presenting his report through (the) use of different tools like PowToon.

I learn new things like (PowToon). My (groupmates) are all contributed in the group report project. I would say their perseverance is contagious. The main reason why I work positively with them is because they are very encouraging and inspiring.

These are the same technologies I am leveraging in the office. In a group where everyone has to contribute, there will always be some members who will not be able to do their part, whether the task is to be done face to face or offline. We will only be fortunate if
their levels of knowledge and grouping can be made based on those levels instead of grouping based on location. In relation to that, studies can also be conducted to determine which among grouping based on location, grouping based on knowledge level, or grouping based on other factors are more effective for online settings. Furthermore, research to look into variations with respect to the technology used for reporting and its suitability to a given course are also recommended.

References


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Research on the construction of seamless learning platform based on open education

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Abstract

Purpose – The implementation of the national education and lifelong education should break through the traditional learning mode in the digital era. A seamless learning environment is the intelligent form of deep integration of digital learning environment and physical learning environment. The development and construction of seamless learning space and platform is a new trend of international mobile learning research and practice. So, the purpose of this paper is to build a seamless learning platform of the open education system by expanding and improving the connotation and extension of seamless learning, based on the theories of mobile learning, ubiquitous learning and open education, combining with the characteristics of the big data era.

Design/methodology/approach – A seamless learning platform model will be constructed through constructing five modules including resource integration module, requirement module, management module, teacher integration module, and carrier module, using interdisciplinary research methods (combined with economics), functional analysis, model methods and exploratory research methods. Finally, this paper attempts to realize the application of a seamless learning platform in open education through the strategic path of public-private partnership (PPP).

Findings – Seamless learning platform model given by this paper can effectively eliminate the problem of information asymmetry between learner-demander and educational manager through the effective management of carrier fusion module. Furthermore, it can effectively integrate the learning resources and teachers of the open education system and social individual education system, and provide high-quality shared learning resources and diverse stratification teachers to students and social workers through PPP project cooperation ways.

Originality/value – There are many papers on the study of open education and resource construction. However, few papers have studied how to effectively integrate and optimize various existing scattered online resources, including various system courses, teachers and platform systems. The paper provides an effective way to solve the above sub-problems and the realization path/model reference for the effective and accurate promotion of lifelong sustainable learning for all.

Keywords Mobile learning, Open education, Seamless learning platform, Ubiquitous learning

Paper type Research paper

1. Introduction

With the further development of social informatization, ever-changing technologies, such as internet and cloud platforms, change people’s thinking, learning, production and lifestyle profoundly. With the development of mobile technology and rapid change in people’s lifestyle, various teaching modes taking the network as the platform are becoming popular in the world and have gradually become an important means for people to obtain instant
fragmentation based on knowledge, which has become a new hotspot in the direction of the
development of education teaching. At present, education, economic and social
developments are more closely related, and the concepts of people’s study, lifelong
learning and individualized learning are becoming more and more popular. In the
“development of national education in 13th Five-Year plan” in 2017, the State Council
pointed out that it will actively promote the development of “Internet plus education” to
promote the digital educational resources generally open and to share digital educational
resources to public services (Chunyu, 2016). At present, the learner’s education mode,
form, content and way of learning are undergoing profound changes; education governance
presents multi-party cooperation, broad participation, and hundred flowers of the
unprecedented event. How to integrate the current social education and learning resources
effectively, eliminate information asymmetry, to build a lifelong learning platform to
provide seamless, and ladder civilian progress are the key to enrich themselves and enhance
the power supply stations. Therefore, it is profound how to build a lifelong learning platform
for the seamless construction of the open education system.

2. Related literature review
Seamless learning has evolved from mobile learning to ubiquitous learning. It is an
intelligent learning state which is based on the integration of information technology means
and equipment, physics learning environment and digital learning resources. Therefore, the
construction of technology and platform is the foundation; the development of seamless
learning requires close integration and integration with related technologies.

The authors of this literature are mostly researchers and technicians in computer
engineering and information engineering. Zhaojun et al. (2014) learnt from the seamless
learning mode in the teacher-student interaction, and observed the contents of the two
aspects of the cognitive interaction, then they designed an interactive PC and android
mobile phone terminal system based on feedback, using the technology acceptance model to
design the questionnaire, and used the questionnaire survey and interviews to collect data.
This technology design has a higher acceptance level in students’ learning and application.
It has a positive effect on the effect of learning; Yushuang Dong, Yingqun Liu, and Xibin
Han of Tsinghua University have constructed a seamless learning model supporting the
conceptual framework and software architecture of the environment (Yushuang et al., 2016).
And applied the system architecture to “Tsinghua Education Online” (THEOL). They found
that the seamless learning model required seamless switching between fixed scene learning
terminal devices and terminal devices that support mobile scene learning. The construction
of a seamless learning environment requires an organic integration of a fixed learning
platform and a mobile learning platform environment, seamlessly integrated with third
mainstream mobile applications (such as WeChat public title). It can be realized that after
seamless integration, seamless switching between platforms, sharing of resources and data
synchronization between learning process and behavior are observed. In the teaching
application, it proved that the conceptual framework and the software architecture of the
seamless learning environment are effective and feasible. Fang et al. (2016) proposed the
seamless learning design model based on it is the foundation of freedom), the development
of learner, learning resources center, service center, assessment center and cultural center.
Kinshuk proposed the 5 R Adaptation Framework (5 R adaptive framework): at the right
time, at the right place, through proper mobile devices, to provide the right learners with the
right content (Fang et al., 2016). Tan et al. (2011) constructed a context aware adaptive
seamless learning system framework based on the 5 R adaptive framework for learners to
carry out personalized mobile learning. This seamless learning system architecture provides
a standardized basis and important reference for the construction of a seamless learning
platform in the future.
From the related literature review, the study of seamless learning is still in the initial stage and exploration stage. However, it is developed based on mobile learning and extensive learning; there is a certain research basis. Related technologies, such as sensor networks and internet of things, are being applied to the construction of platform and space, which verifies the feasibility of the technology. The research of technology support and design, model and resource construction is developing constantly, so the factor system of seamless learning platform is becoming more and more perfect in research and practice. From the above research review, there are still some key aspects which have not been paid attention to: first, more research works have focused on the exploration of norms, techniques, and patterns. No research has been done on effective integration and seamless docking of existing resource systems, management systems, faculty systems, and learner needs libraries. Second, the research on the construction of seamless learning platform is more limited to the construction of technology platform, and the resource utilization is mainly based on the independent resource pool built by a single educational institution. Because seamless learning has evolved from mobile learning to ubiquitous learning based on function and strives to achieve the purpose of improving the effect of derivative, so whether it is teachers, resources, management, demand, and ubiquitous elements of learning, mobile learning all have the same characteristics to a certain extent. Especially as the internet big data era characteristics, social power presents a self-ignition state in the process of specialized teaching and learning resources; the main body of education is no longer confined to educational institutions such as schools. Therefore, it has important practical significance to construct a truly seamless lifelong education learning platform, and know how to effectively integrate the scattered educational resources in the society and regulate them through the government and educational institutions, to reduce the asymmetry between resource suppliers and demanders.

On the basis of the above reviews and theoretical analysis, this paper attempts to break through the following two aspects: first, it will construct a platform conceptual framework of “seamless learning” through the development and improvement of the connotation and scope of the seamless learning platform. In addition to the traditional teachers, learners, technology and resources, the framework focuses on the expansion and management of teachers and resources, and the construction of learners’ needs database. Innovatively, we attach importance to the role of management function in the whole framework; second, it will construct the conceptual model of a seamless learning platform and attempts to realize the application of seamless learning platform in open education through the strategic path of public-private partnership (PPP).

3. Model construction
3.1 The connotation development of seamless learning
From the existing literature research, the concept of “seamless” in seamless learning is mainly reflected in the seamless integration of the three latitudes of time, space and mode, including the integration of classroom learning and extracurricular learning integration, instant communication and non-instant communication, cross-fusion space physical state of learning, the real world and virtual reality (Junliang, 2014), the fusion of formal learning and informal learning, and the integration of a variety of teaching methods and activities.

From the above three aspects of integration, we can see that the original “seamless” concept only focuses on the docking and diversification of learning methods, without taking into account the seamless integration of resources supplies and demand, and seamless integration of teachers and learners. Thus, there are still some shortcomings in exposing the connotation of seamless learning: the limitation of resource supply, and the asymmetry of resource supply and search. The social elites build a course on the web, but fail to track down target customers, as it is difficult for people who have learning needs to match their high-quality resources in the vast amount of information resources.
Starting from increasing the quality and diversity of the supply of resources and reducing the information asymmetry of the supply side of demand, this paper integrates the learner needs module and the management support module into the seamless learning platform. Education and learning resources are no longer merely provided by school teachers, but expand the scope of teachers (Huixin, 2015). It is no longer limited to school teachers, but consists of teachers from various reputed institutions of the community and industry. School depends on three factors: platform, teachers, and resources. Building a bridge between social teachers and learning needs, and introducing a demand database can eliminate the information asymmetry between supply and demand from the information supply of demand side. The elements and connotations of the seamless learning platform before and after the expansion are shown in Figures 1 and 2.

3.2 Basic assumptions of the model
A reasonable hypothesis is the basis and premise of the analysis model formation. The model of seamless learning platform based on open education perspective is mainly based on the following basic assumptions:

Assumption 1. Participants in education (educators and learners) conform to Smith’s hypothesis of economic person and the hypothesis of a rational person to some extent. Both educators and learners expect to pursue and maximize economic benefits at the lowest cost. The effective way to maximize social benefits is exchanging resources under the background of “Internet +” open education.
Assumption 2. Knowledge field's efficiency, allocation and implementation follow the scientific management theory. The process of learning seamlessly is consistent with the management of Taylor proposed management assumptions. Taylor put forward that the interests of both parties are consistent. Increasing workers' income can increase labor productivity, thereby reducing unit time costs. It is a win-win process.

Assumption 3. Open education field also has an information asymmetry.

Assumption 4. Government and Universities are the watchers of open education promotion and educational equity.

3.3 Construction of the seamless learning platform model
Based on the above theoretical analysis and hypothesis, this paper constructs a seamless learning platform including five modules: resource module, demand module, teacher integration module, carrier module and management module. The construction process is as follows.

3.3.1 Resource integration module. At present, sharing economy has become China's new economic model, such as sharing bicycles, sharing power bank, sharing cars and so on. The application of shared mode is more and more extensive, permeating into the educational field, such as sharing courses, sharing books, sharing educational resources and so on. The introduction of shared education concept has important practical significance for the advancement of open education for all. In a person's life, formal education takes up about 20 percent of the time, mainly in school and professional skills, the remaining 80 percent hours are in the informal learning state. The purpose of later learning is diversity, including all aspects of human life (Daoming, 2016), work needs, etc. In formal education, relevant teachers at school mainly provide education resources. While in the informal education, the sources of educational resources are very rich. As a result of the diversity of the learning purpose, a large quantity of diversity and inclusiveness of the demand resources are derived. At this point, if the educational resources are still supplied by the teachers, it is obviously impossible to meet the needs of the open learners, especially the diversity. At the same time, it will also increase the pressure on teachers' resources supply, and reduce the quality of curriculum resources. In fact, the supply of educational resources is not limited to teachers. At the moment when mobile terminals are widely used, open education learners can also be the designers and providers of educational resources. But their learning and education are separated into different fields. Person A, a learner with flower arranging learning needs, is also an English-speaking practitioner. She is also a teacher of spoken English while seeking and using flower arranging learning resources (Qingyuan et al, 2016). At the same time, there is always such a flower arranging teacher, person B, in a corner of the world; she has spoken English learning needs for various reasons. These elites, both of them, are scattered in all walks of life. Because they have many years of experience and industry background, it is the most suitable for them to provide learning resources for their industry and occupation, so as to realize the sharing and dissemination of resources. Such resources are what we call social personal resources.

In the resource integration module, three party resources are mainly integrated: school resources, training institutions resources, and social personal resources. We can provide the shared resource platform and entrance for the open education needs through the integration of these three types of resources, so as to realize the socialized organization of the open education resources, and keep the dynamic, generative, continuous development and evolution ability of the learning resources.

In the process of resource integration and socialization, the school identity which has undertaken most of the functions of open education has changed to a certain extent; in addition to continuing to take part in the provision and guidance of educational resources,
we also need to undertake the screening of the other two types of resources. Resource access standards need to be set for the newly integrated resources, thus ensuring the quality of the shared resources on the seamless learning platform. In addition, the integration of social curriculum resources is a huge process, therefore, the strong support of the local government education authorities in policy and finance is a strong guarantee for the smooth integration of open education resources (Figure 3).

3.3.2 Requirement module. Demand module is the foundation of an open education seamless learning platform. Effective individual demand defines the direction for the provision of open educational resources, therefore, the purpose of the demand module construction is to tap the learning needs of people’s open education (Song, 2016), let these implicit demands be dominant, and keep links with these potential needs learners, so as to realize the matching of supply and demand of curriculum resources (Figure 4).
Brindley (1989) argued that demand includes both objective and subjective needs. The learners' personal information, such as age, sex, nationality, marriage, educational background, or the occupation to be engaged in, is an objective requirement, while learners are concerned with cognitive and emotional needs, such as self-confidence, attitudes, and expectations, they are summed up as subjective needs. At the same time, he also refined the target requirements into necessities, lack of knowledge and wants. Learning needs include learning conditions, learner knowledge, learner skills and strategies, and learner motivation. The construction of demand database is the basis of matching educational resources. And perfect personal data information is helpful to construct learners' personalized learning model, and effective analysis and prediction of learners' learning performance also provide the best reference data for personalized learning support services. At the same time, the high matching of resource supply and demand is also an effective guarantee for the late learning effect of the seamless learning platform.

One of the factors that need to be considered in the learning requirements module is the guidance of the students' participation in the technology strategy. Because learners have different characteristics, the learning effect will be different due to different learning strategies. In order to guarantee the learning effect, it is necessary to guide students according to their personal characteristics (Yanhui et al., 2015). This part of the guidance needs to accumulate through the student’s learning characteristics over a period of time. Let the computer capture-related data in the background, and then summarize its characteristics so as to recommend learning strategies.

In this way, we construct the requirement database of learners in open education according to the construction goal of the demand module, and the classification of learners' needs, the learners' objective needs, subjective needs, and target requirements are discussed. There are many ways to obtain personal information and learning needs, such as interviews, registration, surveys, etc. Combined with the widespread use of mobile phone terminals, the most effective way is through the investigation of electronic questionnaires, such as questionnaires, and stars online survey.

3.3.3 Teacher integration module. In the current open education system, the responsibilities of education lie mainly in open education, community education and training institutions, and the Open University has undertaken most of the pre-job and post-career education needs. The majority of other non-academic education needs tend to search the Internet for educational resources that fit their needs. In the process of building a seamless learning platform, the integration of resources and the integration of teachers are also processed at the same time; therefore, the process of resource screening is also the process of selecting and integrating teachers. Because on the seamless learning platform, most of the functions of school teachers are not limited to the construction and supply of teaching resources; there is a transformation of functions, i.e. they are expected to shoulder the management function of the platform. Therefore, it is necessary to constantly expand the faculty of open education. Which is similar to the integration and expansion of curriculum resources, teacher’s module is mainly to integrate teachers, institutions, and social individual teachers.

Teachers mainly shoulder the management functions of curriculum resources and teachers. And social individual teachers have become an important role of teachers in open education (Haojun and Xu, 2016), thus completing the transformation of the role of teachers in schools. At the same time, the open education has also been pushed into the society completely by individual teachers and learners. Some elite individuals tend to play both parts. Not only can we get the further expansion of knowledge from the open education wave, but also get additional knowledge gains from the role of teachers. Appreciating the sacred personal mission in promoting the open education, teaching and learning promotes each other and forms a virtuous circle (Figure 5).
3.3.4 Management module. The management module is an important factor in the seamless learning platform. This module carries the management of teachers, platforms, students, and resources. It also bears the formulation of resource standards and teacher standards, as well as the bridge between supply and demand. In the module of teacher integration, we refer to a partial change in the functions of teachers, from learning designers, students and resource supply functions, to management functions (Qing, 2016). They are the builders, implementers, drivers, managers, and supervisors of the entire platform. The government’s related education sector is a strong support and booster; they help to promote the road of open education based on the policy and finance. The management module mainly includes: user management system, platform management system, curriculum resource management system and teacher management system. Its functions are shown in Figure 6.

3.3.5 Carrier module. Effective seamless learning relies on the construction of intelligent platform space, that is, the physical support space that combines the above four modules into a whole. The key to the carrier module is to build the platform, post technical support and update the system, including intelligent learning terminals, storage cloud, education cloud computing center, etc. At present, the architecture of learning platform space is becoming more and more mature, and widely used in a variety of learning organizations, and the difference lies in the functional design of perfection, ease of operation, and system compatibility. Once the platform is built, it is not for once and for all; it needs constant updates and maintenance, and compatibility continues to expand too. Technical support is needed at the same time, in order to cope with the technical difficulties encountered in the use of teachers and students, and improve the system according to the problems encountered continuously.

3.4 Open education seamless learning platform system based on PPP model
We integrated the teacher module, demand module, resource module and management module in the platform space supported by third-party technologies. So far, the module construction of the seamless learning platform has been completed, forming a physical...
sense of seamless learning platform. Data flow process in platform space: the third-party technical support team maintains and updates the existing integration platform and keeps the dynamic extensibility of curriculum resource data. The backstage management system carries on the cloud computation to the demand module’s demand data, then the curriculum resources and requirements information in the resource module are dynamically matched. At the same time, the teacher information is also matched. Next, a series of courses that match the needs of learners should be ranked according to the degree of matching, pushing the curriculum to the persons who need for decision making through the information and communication channels. Finally, the user learns the courses of interest at the user terminal interface (Figure 7).
Throughout the process, there are still some unsolved problems: the attribution of curriculum resources, the commitment of operating expenses, the ownership of tuition fees and the way of dealing with the supply and demand sides. It can be seen that school teachers will eventually change from the resource supply side to a platform operation management. Social individual will be the main force of curriculum resource supply and student support, and also the dual identity of learning needs. The government’s relevant education departments provide policy and financial support to schools that bear management functions. The learners can learn courses by way of purchase, which will be shared by managers and teachers.

In this mode of operation, it will easily arise the following problems: as the school has become the main body of the seamless learning platform, the operating costs are all over the backlog. Teachers go back to similar employed parties and it is difficult for them to exert their initiative, and it is easy to cause the teachers to quit because the income is very small. Therefore, we can consider the employers as the main investment abroad except resource provider and student’s identity. Because the service supply of seamless learning platform is to promote the development of open education, it is determined that its nature is not simply a profit-making product, but a similar public product and service. Therefore, we consider the introduction of government and social capital cooperation (PPP) model.

PPP model, means that, in the public service area, the government adopts a competitive approach to select social capital with investment and operational management capabilities. Both parties conclude the contract in accordance with the principle of equal consultation and provide public services from social capital. The government pays social capital according to the results of public service performance evaluation (Li and Cheng, 2015). It can promote the social individual teachers’ enthusiasm to let them become investment and income side to a certain extent in the operation of the seamless learning platform system. The government, the school, the society, the individual, the teachers, the three parties participate in the whole process, and the teachers have deeper participation; this helps to eliminate the asymmetry of information and to achieve more favorable results than expected to act alone.

Throughout the process, PPP is not only a means of financing to promote diversification of the investment body, but also to support the school to bear the full cost of pressure, and share the operational risks of the government and the school; it improves the participation and master role of the teachers, more conducive to the whole seamless learning platform model running. However, the implementation of the PPP model is a complex system engineering, involving the cooperation and agreement between the school and the teachers; it is also a system mechanism change, involving administrative system reform, financial system reform, investment and financing system reform and so on. As space is limited, this is no longer explained here.

4. Conclusions
This paper constructs a seamless learning platform model including teacher integration module, demand module, resource integration module and management module based on the existing theories of mobile learning, ubiquitous learning and open education. And obtained the following conclusions: first, we build a platform element concept framework which can truly realize “seamless learning” by expanding and improving the connotation and scope of the seamless learning platform. The framework especially focuses on the expansion and management of teachers and resources, and the construction of learners’ needs database, except including traditional teachers, learners, technology, and resources. In addition, innovatively, we attach importance to the role of management function in the whole framework; second, the model integrates school, social and institutions, i.e. three types of teacher resources. It effectively solves the problems of insufficient teacher resources
and excessive teaching pressure in the existing platforms. Third, the model integrates the curriculum resources of school, personal and institutional courses from three sides and solves the shortcomings. In the original platform, the school teachers are busy with the construction of curriculum resources all day long, and the quantity and quality cannot be taken into account. It cannot meet the shortcomings of the diversified needs of open education. Fourth, the model provides a matching basis for the supply and demand of resources through the construction of personal learning needs database, reducing the asymmetry of information and improving the efficiency and effectiveness of lifelong career construction effectively. Fifth, it proposes to operate the seamless learning platform through the PPP model, which will promote the diversification of investors. Besides, the participation and spirit of the teachers in the whole process have been improved that can reduce the running risk of the seamless learning platform. At the same time, it improves the supply quality and efficiency of the open education. It provides the basic guarantee for the lifelong sustainable learning of the whole people and provides a model reference for the realization of education for all.

However, there are still some problems unsolved due to limited space, such as it needs to provide learners with seamless learning strategies, learning model, learner learning process, tracking and control, and related data analysis, the rights and obligations between the management and the teachers in the PPP model, rules of cooperation, reform of administrative system, reform of financial system, reform of investment and financing system, etc.; the key technologies in the platform construction, such as sensor networks, Internet of things, and the application of emotion sensing technology, etc. In addition, these deficiencies pointed out the direction for follow-up research. In a word, the application of seamless learning model in the development of open education involves multidisciplinary collaboration, multi-industry collaboration, multi synergy, cross-technical collaboration, etc., the road ahead is still a long way to go.

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References


**Further reading**


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Modelling the notions and dimensions of MOOCs

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Abstract

Purpose – This report explored enriched notions and dimensions of quality massive open online courses (QMOOCs). The purpose of this paper is to visualize the quality measures adjacent to MOOCs and understanding distinctive outlooks to approaching them. It was also of interests to envisage how and in what routines those notions and dimensions interrelated.

Design/methodology/approach – Exploratory-design was employed to qualitatively establishing conceptual and operational frameworks first through reviewing processes and focus-group discussions. QMOOCs were reflected by four dimensions: scientifically provable, technically feasible, economically beneficial and socio-culturally adaptable. Besides, QMOOCs involved six notions (6P: presage, process, product, practicability, prospective and power) and affected knowledge, skills and professionalism (KSP). Quantitatively, QMOOCs, 6P and KSP were the moderating, independent and dependent variables, respectively. Associated data were accumulated through survey by distributing 600 questionnaires randomly to 708 Universitas Terbuka faculty members; 299 of them were completed.

Findings – Nine hypotheses were scrutinized utilizing structural-equation model and eight were validated by the analysis. It was statistically inferred that product was alluded as the prime notion to QMOOCs followed by process, practicability, presage and power; prospective was excluded. Professionalism, knowledge and skill were influenced by QMOOCs. Importance-performance analysis (IPA) and customer-satisfaction index were emulated (and applied) to quantify respondents opinion and relevance degree of those engaged notions and dimensions. IPA analysis revealed four prominent notions (corresponding, functional, well-defined and learner-focused) and one dimension (technically feasible).

Originality/value – Qualitative framework was imperfectly confirmed by the quantitative upshot. Further inquiry is crucial searching for plausible validation how this consequence was marginally distinctive in conjunction with authenticating QMOOCs.

Keywords SEM, MOOCs, IPA, Exploratory-design, CSI

Introduction

Quality was comparatively not objective, it was commonly a kind of measure for a specific purpose. Any discussion of quality primarily in education is, therefore, challenging since it was not a constant construct. Quality issue in education is now getting more complex when it comes to defining the quality of MOOCs. In this context, the quality measure is even much more relative. There was no absolute threshold benchmark can positively be set. There was no definitive list of specific or fixed criteria that MOOCs can be precisely measured against (Hood and Littlejohn, 2016). Despite MOOCs by its own characteristic, as summarized by Gemage et al. (2015), had common nature in the form of short videos, quizzes, peer base and/or self-assignment and online forums but there are still some pedagogical differences in the courses despite in the same platform. Thus, any discussion of quality here must dynamically take into account the diversity amongst MOOCs and various frames of stakeholder references; and they are often differing one another.

In the conventional formal education, there had tended to be consensus among parties involved as to deceiving intention of a specific course or program. Nonetheless, there often
remains debate over defined definitions and measures of quality as part of evaluation approach in higher education (Tran, 2015). MOOCs potentially interrupt many of existing conventions and assumptions of formal education, both in offline and online modes of delivery. Their unique features are challenging the parameters of learning and even education, raise new questions about their purposes and the roles that they can play in lifelong learning perspectives. In consequence, MOOCs quality can be viewed and measured in various different ways. The quality measures employed and the nature of data accumulated in each case act to privilege a specific facet of MOOCs, such as instructional design issues, quality of media and/or learner performance. Establishing a robust understanding of quality in MOOCs should consider activities and components that make up the experience of learners; this is a crucial consideration in measuring the range of notions and dimensions of quality (Sumner, 2000).

This inquiry is in essence adopting relativist approach by emphasizing the importance of the context. It implies that identification of variables (notions and dimensions) and their structure unified into the conceptual and operational frameworks, referring to Biggs (1996), do not necessarily provide a concrete answer to the conundrum in assessing the quality. At this stage, we are not establishing conclusive set of measures that can be employed to absolutely measure the quality despite some of the measures emerged from both literature and expert judgement. It is expected that ideas introduced here might underpin related stakeholders to critically thinking on quality in the frame of MOOCs. It is also anticipated that it can emphasize areas of research that might be proposing new instruments and different ways of approaching and measuring the quality of MOOCs. Most importantly, the critical success factors (notions and dimensions) that affecting the quality of MOOCs required to be investigated by and from real participants of MOOCs to make the results more appropriate (Gemage et al., 2015). This is to assure interactivity, collaborativeness, pedagogy and technology influences are considered viewed from user perspectives so that the MOOCs are really effective.

MOOCs in Universitas Terbuka ambiance were institutionally introduced and accessible to everyone within this several years back. As per 2016 for instance, seven programs were officially offered by the university. They were: Marketing Management (Faculty of Economics); Public Speaking; ASEAN Studies (Faculty of Law, Social and Political Science); Assorted Food Processing; Distance Education; Introduction to Moodle (Faculty of Mathematics and Natural Sciences); and Parenting (Faculty of Education and Teacher Training). The number of hits to those programs was promising up to 435,706 hits. The data showed, however, only 1,673 and 1,308 learners were participated (registered) and 182 and 137 completed (graduated) in the first and second semester of 2016, respectively, while the student body was approximately 297,000 (Universitas Terbuka, 2017). This implied that the participation rate was extremely low considering the total population of Indonesia was more than 250m. Most of them were now objectively necessitated self-continuous professional development through self-directed learning mode (MOOCs). What is more, Universitas Terbuka is one of few institutions in the country offering MOOCs without any restriction. Participation rate and demand for MOOCs in Indonesia context (through Universitas Terbuka tradition) should presumably be high.

Referring to those stated factual numbers, there are two prime possibilities why the participation rate and demand were considered to be enormously low. Externally, MOOCs are not well-adored by the society. Internally, the programs offered might not be in harmony with the demand (not market driven) in one hand and/or the quality of available program might still not meet the standard or expectation behold by learners as users on the other hands. This study is, therefore, focus on the latter case, on the quality issues. They were not in good quality might be owing to the notions of presage, process and/or product outlooks. All the same, the university strongly insisted to providing MOOCs to everyone nationally, regionally and even globally; since it was one of the main mission of the university—the dissemination of knowledge.
Searching for reasonable reasons methodically on how and why the programs are not well-adopted become important. This is supported by the facts that there are still some questions on the pedagogy aspect reflecting by the dropout rates related to the learning activity, learning resources and organization aspects (Jansen et al., 2017). Dealing with these essential issues, two fundamental factors should then be taken into account cautiously, they are requirements for users and recommendation for designers (Stracke, 2017).

The purpose of this exploratory inquiry is, therefore, to identify quality measures of MOOCs and to highlight some of tensions surrounding notions and dimensions of quality in a more detail manner. It is also of interests to envisage the need for new ways of thinking on and approaching agreeable quality Massive Open Online Courses (QMOOCs). It draws upon the literature on both by MOOCs and quality in education more generally. It was expected to provide practical framework to analytically consider the quality programs on different variables (notions and dimensions); these concerns must be considered when conceptualizing plausible quality conundrums in MOOCs.

The conceptual framework

Conceptually, the exploratory framework of the study starts with the general perspectives of MOOCs outlooks in Universitas Terbuka context in Indonesia. This is the basis of the university to provide broader opportunities in relations to making higher education open to all, as the tagline of the university, associated with improving knowledge, skill and professionalism for every Indonesian citizen worldwide behold by faculty members of the university (Figure 1).

The conceptual or the exploratory framework (Figure 1) is then utilized as a tool of weighing up QMOOCs and their inferences noticed from Universitas Terbuka perspectives as the only university operating single mode of delivery through open distance learning (ODL) in the country. This would let the university to modify important aspects related to operational aspects in accommodating learners’ needs. It might focus on institutional directions to accomplish learners’ need and expectation so the university is able to maintain
and make progress on the size and growth of QMOOCs as projected and officially stated in
the formal document of the university. In other words, this is the way on how the university
searching for proper and adequate orientation to maintain its main role and function in
eradicating access to quality education supplies (Universitas Terbuka, 2014).

Before introducing an operational framework for this study, it is worth perceiving that
quality MOOCs were determined by six notions, they are here called as the 6P model. The 6P
is an extension of 3P model (presage, process and product) as introduced by Biggs (1993)
and later elaborated further by Hood and Littlejohn (2016). In addition, as again highlighted
by Gemage et al. (2015), this conceptual framework considered to be essential issues to
understand what drives motivation and interest as well as changing the culture from have
to learn into want to learn so that the pedagogic aspect remains the same as it was delivered
by face to face interaction in the tradition teaching and learning milieu.

In Universitas Terbuka, especially for this study, quality measures for MOOCS were
determined by six main factors, called the 6P model (an enrichment of the 3P model). Each
variable is elaborated into notions and/or dimensions along with their attributes related to
QMOOCs. Besides, QMOOCs lead to knowledge, skill and professionalism. To ease the naming,
variables with related notions, dimensions and the related indicators are prearranged in Table I.

<table>
<thead>
<tr>
<th>No.</th>
<th>Variables</th>
<th>Dimensions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Presage $I_1$</td>
<td>$I_{11}$: platform $I_{12}$: well-defined $I_{13}$: methodical $I_{14}$: natural</td>
<td>$I, M$ and $D$ stand, respectively, for independent, moderating and dependent $I_{1,6} \times M$ and $D_{1,3}$ were independent, moderating and dependent variables successively</td>
</tr>
<tr>
<td>2</td>
<td>Process $I_2$</td>
<td>$I_{21}$: pedagogy $I_{22}$: inclusive $I_{23}$: systematic $I_{24}$: functional</td>
<td>Each independent variable ($I$) has four dimensions and four questions These questions should be answered two times concurrently</td>
</tr>
<tr>
<td>3</td>
<td>Product $I_3$</td>
<td>$I_{31}$: learner-focused $I_{32}$: well-presented $I_{33}$: appealing $I_{34}$: superior</td>
<td>The first part of each question measured their opinion level and the second part measured its importance degree</td>
</tr>
<tr>
<td>4</td>
<td>Practicability $I_4$</td>
<td>$I_{41}$: innovative $I_{42}$: advantageous $I_{43}$: affable $I_{44}$: manageable</td>
<td>$M$ was influenced by $I_{4,6}$. Others ($D_{4,3})$ are determined by $M$ and questions on these three variables were answered one time only by respondents Total questions: 63 ($2 \times 28$) + ($1 \times 6$) + 1</td>
</tr>
<tr>
<td>5</td>
<td>Prospective $I_5$</td>
<td>$I_{51}$: novelty $I_{52}$: corresponding $I_{53}$: insightful $I_{54}$: universal</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Power $I_6$</td>
<td>$I_{61}$: encouraging $I_{62}$: inspiring $I_{63}$: satisfying $I_{64}$: sustainable</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Quality MOOCS $M$</td>
<td>$M_1$: scientifically provable $M_2$: technically feasible $M_3$: economically beneficial $M_4$: socio-culturally adaptable</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Knowledge $D_1$</td>
<td>$D_{11}$: conceptual level $D_{12}$: operational level</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Skill $D_2$</td>
<td>$D_{21}$: hard skill $D_{22}$: soft skill</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Professionalism $D_3$</td>
<td>$D_{31}$: being creative $D_{32}$: being grit</td>
<td></td>
</tr>
</tbody>
</table>

Table I. Variables, dimensions and remarks
Conceptual definitions: QMOOCs were defined as a manifestation of presage, process, product, practicability, prospective and power and at the same time they were influencing knowledge, skill and professionalism. Moreover, presage was referred to resource and factor related to teaching and learning process, including learners, instructors, institution and platform. Process was referred to the course of actions associated with the presage variable including instructional design issues, pedagogical approach and various learning resource supports. Product was the outputs and/or outcomes of the total educational processes. Practicability was referred to the easiness of learners to accessing and using the products in terms of their operations and continuation. Prospect was defined as learners perceptions on the innovation and connectedness of the program related to the current circumstance. Power was expressed as an influential force to nurture learners as users to utilize the program and take advantage of them (Downes, 2013; Lin et al., 2015; Littlejohn et al., 2016; Margaryan et al., 2015; Hood and Littlejohn, 2016).

Operational definitions: In terms of their dimensions, QMOOCs should be scientifically provable, technically feasible, economically beneficial and socio-culturally adaptable (Sembiring, 2008). Additionally, factors close to platform, well-defined, methodical and natural outlooks were specified as the notions of presage. Factors on the point of pedagogy, inclusive, systematic and functional outlooks were specified as the notions of process. Factors resembling to learner-focused, well-presented, appealing and superior outlooks were specified as the notions of product. Factors reminiscent of innovative, advantageous, affable and manageable outlooks were specified as the notions of practicability. Factors indicative to novelty, corresponding, insightful and universal outlooks were specified as the notions of prospective. Factors symptomatic to encouraging, inspiring, satisfying and maintainable outlooks were specified as the notions of power.

Besides, features in the sense of conceptual and operational outlooks were identified as the notions of knowledge. Features in the connotation of hard skill and soft skill outlooks were identified as the notions of skill. Features in the terms of being creative and grit outlooks were identified as the notions of professionalism.

Design, operational framework and hypotheses
This study utilizes mixed methods, i.e. exploratory-design (Creswell and Clark, 2011). It is conducted under qualitative approach first and then followed by quantitative sequence. Two instruments are established; they are the list of unified questions for the processes of review, interview and/or focus-group discussion or FGD (for qualitative purpose) series and questionnaires for accumulating-related data (for quantitative purpose). Qualitative approach was entailed to construct the conceptual framework and eventually lead to propositioning the hypotheses arrangement after constructing the operational framework. To accomplish this stage, some queries were first developed derived from related literature reviews (for FGDs sessions afterwards) and they were finally utilized as the bases to established hypotheses to be examined statistically. With respect to the related literatures study conducted, another qualitative approach was used to form the basic elements of the conceptual framework by conducting FGDs and interviews with assigned three experts (designers) from the university, as well as selected five active learners.

Designers and learners, as resource persons for this research, were basically interviewed under five main questions for attaining deeper insight on the context related to: What would be predictive notions and dimension of accepted MOOCs as an moderating (M) variable with respect to QMOOCs? What would be potential indicators associated with each notion and dimension engaged? How would be the influence of QMOOCs to learners ability (performance) in terms of knowledge, skills and professionalism perspectives interrelated one another? How would designers rate on the MOOCs provided by the university? and How would learners rate on the MOOCs delivered by the university and directly experienced by them?
Having completed all qualitative series and amalgamated all the results derived from reviews and FGD sessions, they were all systematically summarized, as can be seen in Table I. The table is utilized as the basis of developing required and relevant instruments as well as establishing the initial operational framework, as illustrated in Figure 2.

Variables engrossed are explored through questionnaire inspired by Tjiptono and Chandra (2011) and Shahzavar and Tan (2011). Questions in quantitative phase for the questionnaires (referring to \( I_{11} \)–\( I_{64} \) and \( M_{1} \)–\( M_{4} \)) were simultaneously answered two times by respondents. The first and second answers are to measure respondent opinion level and their importance degree, respectively, on QMOOCs. The rests (referring to \( D_{11} \)–\( D_{26} \)) were answered once to view the impact of QMOOCs related to learner knowledge, skill and professionalism. Plus, an extra closing question on the future of MOOCs with a good quality measures in Universitas Terbuka context. Survey is implemented to accumulate required data from respondents (Fowler, 2014). Purposive (for qualitative purpose) and simple random (for quantitative purpose) sampling techniques are chosen to select eligible respondents, respectively (Cochran, 1977). For qualitative series, three designers and five learners were involved. For quantitative series, 600 questionnaires were provided and randomly distributed to all academic staff (they are 708 in total). Importance-performance analysis customer and satisfaction index (IPA–CSI) are emulated and simultaneously employed to measure their opinion along with relevance degree on QMOOCs (Silva and Fernandes, 2010; Sembiring, 2016). Structural-equation model (SEM) is finally used to identify plausible relations among all variables involved (Marks et al., 2005; Wijayanto, 2008; Hair et al., 2009).

Figure 2 also describes features affecting QMOOCs (\( M \)) leading to learners’ knowledge (\( D_{1} \)), skill (\( D_{2} \)) and professionalism (\( D_{3} \)). Dimensions of QMOOCs should be scientifically provable (\( M_{1} \)), technically feasible (\( M_{2} \)), economically beneficial (\( M_{3} \)) and socio-culturally adaptable (\( M_{4} \)). The QMOOCs (\( M \)) were assessed by perceiving the notions and attributes of presage (\( I_{1} \)), process (\( I_{2} \)), product (\( I_{3} \)), practicability (\( I_{4} \)), prospective (\( I_{5} \)) and power (\( I_{6} \)). The instrument (questionnaire) consisted of 2 x 28 questions related to the respondent opinion on QMOOCs. The operational framework of QMOOCs is illustrated in Figure 2.
the QMOOCs and the level of their importance. Plus six additional questions to validate knowledge, skill and professionalism; whether or not they were affected by and relatable to QMOOCs; and one closing specific question on the future of MOOCs in Universitas Terbuka tradition (consisted of 63 questions in total). Serially, these results will afterwards be unified and compared with earlier qualitative framework established.

This approach then statistically scrutinizes the following hypotheses (Figure 2):

- H1. QMOOCs are directly influenced by presage.
- H2. QMOOCs are directly influenced by process.
- H3. QMOOCs are directly influenced by product.
- H4. QMOOCs are directly influenced by practicability.
- H5. QMOOCs are directly influenced by prospective.
- H6. QMOOCs are directly influenced by power.
- H7. QMOOCs are directly influenced by learner knowledge.
- H8. QMOOCs are directly influenced by skill.
- H9. QMOOCs are directly influenced by professionalism.

Results and discussions
Before conversing to the end upshots, it is valuable to represent the respondent characteristics (Table II). This will enrich perspectives on the outcomes obtained afterwards. Other elaborative analyses are further detailed in the next clarification (Table III, Figures 3 and 4).

Before describing the final results, on the relations power amongst notions and dimensions engaged and how they were interrelated one another, it is good revealing the level of respondent opinion on QMOOCs and their relevance degree resulted from IPA–CSI chart. The analysis generates spots of opinion to the related quadrants (Q) to comprehend the degree of their relevance (Figure 3). The figure has four Qs: Q1 (Concentrate Here), Q2 (Maintain Performance), Q3 (Low Priority) and Q4 (Possible Overkill); following Wong et al. (2011).

Q1 has two attributes that should be carefully noted by the university: I23 (systematic process) and I64 (maintainable). Q1 indicates that respondent’s opinion is at a low level.

<table>
<thead>
<tr>
<th>Faculty 299 respondents</th>
<th>Education</th>
<th>Social science</th>
<th>Economics</th>
<th>Math</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Echelon</td>
<td>One: 0</td>
<td>Two: 1</td>
<td>Three: 4</td>
<td>Four: 9</td>
<td>Non: 86</td>
</tr>
<tr>
<td>Age year</td>
<td>&lt; 29: 4</td>
<td>30–39: 12</td>
<td>40–49: 52</td>
<td>50-59: 24</td>
<td>60*: 8</td>
</tr>
<tr>
<td>Involved in MOOCs year</td>
<td>&lt; 1 = 43</td>
<td>1–2 = 49</td>
<td>3–4 = 8</td>
<td>5–6 = 0</td>
<td>7* = 0</td>
</tr>
<tr>
<td>Credential</td>
<td>Professor: 0</td>
<td>Senior lecturer: 8</td>
<td>Lecturer: 89</td>
<td>Assistant lecturer: 3</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Doctoral: 6</td>
<td>Master: 92</td>
<td>Bachelor: 2</td>
<td>Diploma: 0</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Three designers and five learners were involved in this study (for qualitative approach). Besides, 299 completed questionnaires (out of 600 distributed questionnaires for all 708 academic staff) were finally processed. It is worth to note that most of staff are relatively less experienced in MOOCs despite they are actually senior in terms of working experiences and age. Besides, the vast majority of them are holding master degree and non-echelon staff. To certain extent, they can be categorized as novice in the movement of MOOCs in Universitas Terbuka tradition.
whereas the degree of its relevance is high. Here, the university must pay attention to this evidence and put them into the top of priority so the provision of MOOCs with high-quality measures might be fulfilled and the program itself (quality MOOCs) are more likely to be well-adored by most learners as users for they are encouraging and advantageous.

$Q_2$ includes 11 points that should be cautiously recognized by the university: $I_{52}$ (corresponding); $I_{24}$ (functional); $I_{22}$ (inclusive); $I_{51}$ (learner-focused); $I_{21}$ (pedagogy aspect); $I_{51}$ (novelty); $I_{34}$ (superior product); $M_2$ (technically feasible); $I_{33}$ (appealing); $I_{11}$ (the platform) and $I_{32}$ (well-presented). $Q_2$ is a symptom of respondent opinion and the relevance degree are both being placed at a high level. The university must take care of these 11 points so that more learners get advantages and will pursue their programs through MOOCs with intent. All attributes fall into this quadrant are the strength and pillar of QMOOCs in Universitas Terbuka context; these are the critical points of authenticating the quality measures of MOOCs.

$Q_3$ has 13 points that should also be remarked by the university: $I_{53}$ (insightful); $I_{43}$ (affable); $I_{61}$ (encouraging); $M_1$ (scientifically provable); $I_{63}$ (satisfying); $I_{42}$ (advantageous); $I_{44}$ (manageable); $I_{62}$ (inspiring); $I_{11}$ (innovative); $M_3$ (economically beneficial); $M_4$ (socio-culturally adaptable); $I_{14}$ (natural) and $I_{13}$ (methodical). $Q_3$ is an indication of both respondents opinion and degrees of their relevance are in a low category. The university should classify them all as the next focus after concentrating on critical points especially found in $Q_1$ and maintaining all points in $Q_2$. Any attribute falls into this quadrant is not so important and poses no direct threats with respect to assuring MOOCs with good quality measures.

<table>
<thead>
<tr>
<th>Goodness of Fit</th>
<th>Cut-off values</th>
<th>Results</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root mean square of residual (RMSR)</td>
<td>≤0.05 or ≤0.1</td>
<td>0.071</td>
<td>Good fit</td>
</tr>
<tr>
<td>Root mean square error of approximation (RMSEA)</td>
<td>≤0.08</td>
<td>0.056</td>
<td>Good fit</td>
</tr>
<tr>
<td>Goodness of fit index (GFI)</td>
<td>≥0.90</td>
<td>0.970</td>
<td>Good fit</td>
</tr>
<tr>
<td>Adjusted goodness of fit index (AGFI)</td>
<td>≥0.90</td>
<td>0.960</td>
<td>Good fit</td>
</tr>
<tr>
<td>Comparative fit index (CFI)</td>
<td>≥0.90</td>
<td>0.980</td>
<td>Good fit</td>
</tr>
<tr>
<td>Normed fit index (NFI)</td>
<td>≥0.90</td>
<td>0.960</td>
<td>Good fit</td>
</tr>
<tr>
<td>Non-normed fit index(NNFI)</td>
<td>≥0.90</td>
<td>0.980</td>
<td>Good fit</td>
</tr>
<tr>
<td>Incremental fit index (IFI)</td>
<td>≥0.90</td>
<td>0.950</td>
<td>Good fit</td>
</tr>
<tr>
<td>Relative fit index (RFI)</td>
<td>≥0.90</td>
<td>0.950</td>
<td>Good fit</td>
</tr>
</tbody>
</table>

Table III. Goodness of fit of the model

Figure 3. The IPA–CSI chart
Finally, \(Q_4\) has two points, they are: \(I_{12}\) (well-defined) and \(I_{54}\) (universal). \(Q_4\) indicates that these two points are considered much less important to approaching QMOOCs but most respondents considered them as high in relevance. Here, again, attention to attributes included in this quadrant might be less focused. So, the university can save costs by redirecting them to take up crucial point in \(Q_1\) and again maintaining all fundamental aspect found in \(Q_2\) to satisfy learners need in the provision of QMOOCs.

Now, let observe hypothesis analysis and the loading factor outcomes from the examined model, as illustrated in Figure 4, to witness how the real interrelations amongst notions and dimensions involved as well as the power of their relations one another.

Figure 4 clearly shows that one of the nine hypotheses examined was statistically not validated by the analysis (\(H_5 = 1.42\), namely prospective to QMOOCs), as the \(H_{\text{value}} \leq 1.96\) for \(\alpha = 0.05\). Contrariwise, the rests were all directly and positively validated by the analysis. They are: \(H_1 = 2.21\) (presage to QMOOCs), \(H_2 = 4.46\) (process to QMOOCs), \(H_3 = 6.61\) (product to QMOOCs), \(H_4 = 2.49\) (practicability to QMOOCs), \(H_6 = 2.01\) (power to QMOOCs), \(H_7 = 11.14\) (QMOOCs to knowledge), \(H_8 = 9.69\) (QMOOCs to skill) and \(H_9 = 14.26\) (QMOOCs to professionalism), as the \(H_{\text{value}} \geq 1.96\) for \(\alpha = 0.05\).

Having scrutinized the hypotheses and arranged all notions and dimensions in appropriate quadrants, we are now in the position of relating the loading factors of the tested quantitative framework to observe the power of relations under SEM approach to positively work out the end results. Figure 4 explicitly reveals five prime remarks that need to be elaborated and highlighted in further details:

1. The first is related to the five main variables that directly and positively influencing QMOOCs. They are orderly rank as: product (0.35), process (0.27), practicability (0.12), presage (0.10) and power (0.08). Note cautiously that the most critical aspect here is on the product of the MOOCs itself. Consulting to the initial 3P model, with an extension version called 6P for this study, it remains that the most influential factor is still from the initial model that is product (Biggs, 1993).
It means that MOOCs is considered to be having good quality measures observed from the product itself first.

(2) The second is relatable to the rank of attributes associated with the five validated notions as the independent variables, namely:

- **Product** ($I_3$): learner-focused ($I_{31} = 0.84$), superior ($I_{34} = 0.83$), well-presented ($I_{32} = 0.82$) and appealing ($I_{33} = 0.78$). It implies that learner-focused is the most important aspect in the product of QMOOCs according to the staff as compared to the other notions and dimensions in this setting. This result was also acknowledged by both designers and learners resulted from qualitative approach conducted beforehand.

- **Process** ($I_2$): pedagogical notion ($I_{21} = 0.85$), functional ($I_{24} = 0.84$), systematic ($I_{23} = 0.81$) and inclusive ($X_{22} = 0.79$). Here, pedagogy is the most critical aspect behold by the staff. This was really the main concern to assure the quality of MOOCs as also highlighted by both Gemage *et al.* (2015) and Jansen *et al.* (2017).

- **Practicability** ($I_4$): innovative ($I_{41} = 0.87$), affable ($I_{43} = 0.85$), manageable ($I_{44} = 0.73$) and advantageous ($I_{42} = 0.71$). Here, innovativeness is very important in terms of providing QMOOCs. Innovativeness is one way of making MOOCs become more attracting viewed from learners standpoint.

- **Presage** ($I_1$): platform ($I_{11} = 0.88$), methodical ($I_{13} = 0.84$), well-defined ($I_{12} = 0.72$) and natural ($I_{14} = 0.67$). In this part, the platform of the measures is still the most valuable one according to most respondents.

- **Power** ($I_6$): maintainable ($I_{64} = 0.86$), satisfying ($I_{63} = 0.78$), encouraging ($I_{61} = 0.76$) and inspiring ($I_{62} = 0.71$). QMOOCs in the frame of their power are critically related to maintaining the substance experienced by learners.

(3) The third is concerning the order of MOOCs dimensions viewed from quality measures outlook. It was discovered successively as follows: technically feasible ($M_2 = 0.80$), scientifically provable ($I_1 = 0.78$), economically beneficial ($I_3 = 0.68$) and socio-culturally adaptable ($I_4 = 0.66$). It is good to see respondents placed technical issue as the prime concern with respect to providing MOOCs with good quality measures. It also implies that what is crucial for them, as novice in MOOCs movement in Universitas Terbuka tradition, is on the technical issues rather than that of scientific and economic aspect and even from social and cultural notions. In other words, they are more interested in knowing the technical issues for the future so that learners have wider opportunity to have a better future after completing their MOOCs programs.

(4) The fourth is on the relation powers of QMOOCs towards the dependent variables. Figure 4 evidently confirmed that MOOCs with accepted quality measures had significant effects on: professionalism ($D_3 = 0.35$) then followed by knowledge ($D_1 = 0.31$) and skill ($D_2 = 0.23$). This implies that most respondents strongly believed that QMOOCs are able to assuring learner’s professionalism and knowledge rather than that of improving their skill; this is positive as the mode of delivery utilizing media of learning and fully ICT-based. This is to say that, according to most respondents, acquiring skill with more practical work through laboratory work for example is more difficult rather than that of acquiring knowledge and even professionalism (indicated by becoming more creative and grit).

(5) The fifth is on the rank of professionalism, they orderly are: grit ($D_{32} = 0.80$) and followed by creative ($D_{31} = 0.63$). On the rank of knowledge, they are: operational
Before amalgamating the qualitative and quantitative results, it is worth considering the analysis of goodness of fit of the tested operational framework. The analysis shows that they are all in good fit category (Table III). It implies that the quantitative result is statistically reliable to be used as a point of reference to draw inferential closing remarks to be unified with the qualitative construct that had been established beforehand. It is important to bear in mind that under statistical approach one of the independent variable (prospective) was excluded by the analysis as one of the influencer to QMOOCs. Since the tested framework was categorized in good fit category, this upshot is reliable. All the same, the qualitative approach previously established that prospective was one of the main factor to QMOOCs. Further inquiry need to be done to see how this result ends up with this slight difference.

Having collected and aggregated outcomes accomplished by quantitative and qualitative inquiries, three major validities need to be noticed and elaborated thoughtfully. The first is on the conceptual and operational framework (Figures 2 and 4 and Table I). The second is on the IPA–CSI chart (Figure 3). The third is on the chosen methodology property (qualitative vs quantitative approaches).

It was quantitatively understood that professionalism was confirmed as the primary aspect and then followed by knowledge and skill as a results of MOOCs with good quality measures. This result is slightly distinctive with the qualitative inquiry previously obtained from literatures, interviews and FGDs series. Besides, in terms of their order, quantitative effects also showed slight dissimilarity. Nevertheless, they only varied in the attributes level and order of the dependent and independent variables. This is a good sign. This implies that the results obtained under quantitative approach are still in the same sphere with quite low contradictory effect as compared to the qualitative structure. In the qualitative structure, QMOOCs positively leads to knowledge first and then followed by skill and professionalism. In quantitative upshot, it goes to professionalism first and then followed by knowledge and skills.

The quantitative outcomes here partially excluded prospective variable with its notions as compared to qualitative framework; supplementary explanation is clearly needed for this difference. Why? MOOCs were initially intended to open more access and/or opportunities for lifelong learning movement and continuous professional development at the same time. It implies that the future of MOOCs is important. The quantitative end shows that the prospect of MOOCs was not included as one of the main important predictive factor. Whereas in qualitative structure, it was considered by both designers and learners as one of crucial element in QMOOCs. From Table II, it was detected that most respondents are novice in MOOCs movement in the university environment. It implies that most of them have fewer experiences in the movement of MOOCs as a new approach to developing human resources in Indonesia perspective. It also implies that the vast majority of them are more sensitive searching for learning resources with superior quality product and practicability rather than the prospect of the material in terms of their novelty and even the appropriateness. In short, this is the validation on how and why the prospective notion was statistically excluded by the analysis. The rests of quantitative outcomes are consistent with qualitative marks.

The IPA–CSI chart effects were reinforced quantitatively by SEM outputs. By combining these upshots, it will objectively direct the university to formulate alternative course of actions for future needs on anticipating and authenticating MOOCs with appropriate quality measures accordingly. Qualitative inquiry, here, was in line with the quantitative conclusion. It has been phenomenon that most universities are limited by the tangible
resources, 5-M (man, money, material, machine and method) in exploring new ways of improving the quality of any service; especially in developing and maintaining QMOOCs. By considering this constraint, according to Sembiring (2016), it is just right to re-formulate new ideas how to effectively re-direct resources such that sufficient efforts and supports are available to deal with aspects in \( Q_1 \) and maintaining critical aspects in \( Q_2 \), as also suggested by Tileng et al. (2013). It should be cautiously taken into account that maintainable attribute (as a notion of power, \( I_{64} \)) and systematic attribute (as a notion of process, \( I_{23} \)) are two critical notions in developing QMOOCs. These two notions were in a low level but they are relevance with respect to providing QMOOCs.

This result will be incredibly useful to re-formulate on things that should be put as the top priority by the university to fulfill the quality measures of MOOCs in conjunction with satisfying the needs of learners. The attributes dropped into \( Q_1 \) (Concentrate Here Quadrant—systematic and maintainable notions) should be brilliantly controlled. At the same time, 11 notions dropped into \( Q_2 \) (maintaining performance) should also be repeatedly preserved as they are the pillar of QMOOCs presuming the university is going to pursue good quality measures in MOOCs. By all means, the notions from \( Q_1 \) should be moved onto \( Q_2 \). It will improve the possibility of learners getting satisfied. The more learners satisfied, the more likely they accessed and utilized the program (MOOCs). This implies that the university will be able to approaching the vision through the three missions, namely enlarging access, developing system and disseminating science and technology through ODL mode of delivery as it was initially projected in the strategic plan (Universitas Terbuka, 2017).

Looking up to the third effect, it appears that the mixed method used in this study (exploratory-design) is reliable despite the slight and minor difference on the end results still did take place. The differences in terms of the end results took place insignificantly in the hypotheses testing (still in positive relation); not in the conceptual outlooks within the dependent variables. Despite the difference, it does not indicate they are in high contradictory intensity. It can then be inferred that the difference took place are basically to amplify perspectives on the context supposing comparable study is arranged in the near future.

At the end, respondents were asked a closing question: what is your perception and expectation on the MOOCs movement and the possibility of their success operations through Universitas Terbuka experience? The answers provide a quite robust acceptance that in the future the university will be able to accomplish the initial planned in terms of providing and maintaining MOOCs movement. How? As the answers to this question is convincing. They are: completely disagree = 3 percent, disagree = 12 percent, agree = 39 percent, strongly agree = 37 percent and extremely agree = 9 percent. Up to 85 percent of respondents believed the university is on the right path to uphold its righteous missions in providing MOOCs for all; this is a good indication for the university.

Having discussed all related notions and dimensions with respect to QMOOCs, it is important to note that MOOCs have the promise to transform and enhance the future of learning practices. It has been identified the need for new strategies and measures dealing with high attrition rates by looking at the validated five main factors previously discussed in conjunction with meeting learners’ requirements and intentions. It was suggested that quality indicators for MOOCs have to take into account and evaluate the individual goals and intentions viewed from learners attitude (Stracke, 2017). The design has to address and enable the variety of different individual motivations, intentions, as well as learners pursued attainments. All these aspects can be recognized by probing personal objectives and their reflection, offering personalization of learning pathways by measuring the success of MOOCs based on actual individual intentions.

Concluding interpretation

The research has created both qualitative and quantitative frameworks of quality measures on MOOCs and their notions and dimensions in Universitas Terbuka milieu with respect to
their links extended from a comprehensive analysis of educational perspective and staff attitudinal. The frame was validated using SEM through assessing empirical data by survey of 299 respondents (Universitas Terbuka faculty members). The study ascertains QMOOCs leads to professionalism and then followed by knowledge and skill characteristics. Additionally, QMOOCs are affected by product, process, practicability, presage and power. Three main variables, as introduced by Biggs (1993), are significantly influencing QMOOCs. Under IPA–CSI procedure, two notions that should be cautiously noticed in anticipating and fulfilling learners’ satisfaction in using MOOCs were maintainable and systematic notions; and stated eleven notions should be repeatedly highlighted at the same time.

Further research, however, is crucial and it should explore quality notions and dimensions level beyond what had been included in the tested framework here searching for reasons behind the slight differences as previously disclosed. The scope of the study should also be broadened beyond faculty members from Universitas Terbuka. It would put forward more comprehensive perspectives on professionalism, knowledge and skill variables with reference to QMOOCs to meeting learner’s needs as open and distance learners. This in turn will obviously improve learner’s completion rate utilizing MOOCs through Universitas Terbuka attempts; this is in line with Prena et al. (2014).

Referring to the analysis previously described, as also underlined by Stracke (2017), it needs to draw consequences (for learners) and recommendations (for designers) related to the provision of QMOOCs. Both learners and designers are required to realize on the objective, realization and achievement aspects of involving in MOOCs. Consequently, learners should be aware of different individual goals, various learning strategies and different intention to achieve in the MOOCs in one hand. On the other hands, designers should also be more sensitive asking for individual learning objectives and their reflection, offer personalization of learning pathways and measure the success of MOOCs related to individual goals or intentions.

In short, this will provide opportunity for the university to be more contributively in supporting the government of Indonesia to eradicate restraints access to quality higher education. If this awareness is emblematical worldwide, as indicated by Zhenghao et al. (2015), management and academic elsewhere are also well-advised to ruminate on the notions and dimensions of QMOOCs explored here. It was to prolonged continued existence of their institution in the provision of MOOCs with supreme quality and more importantly they are learner-centered and well-presented.

For the nations, through Universitas Terbuka experiences, professionalism, knowledge and skill can be conquered through the provision of MOOCs with utmost quality measures. This means that the university is on the right path to encourage its righteous mission of making higher education open to all with respect to protecting the nation through flexible quality education. The university will be in harmony to reorganize the vision of becoming the world quality institution preparing the world quality graduates (Universitas Terbuka, 2014, 2017; Sembiring, 2015, 2016).

References


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