

Empowering Lifelong Learning through Open Universities in Taiwan and Indonesia

Aminudin Zuhairi

Faculty of Teacher Training and Education, Universitas Terbuka, Indonesia

Amy Ching-Tsu Hsueh

Department of Living Science, National Open University, Taiwan

I-Chin Nonie Chiang

Department of Humanities, National Open University, Taiwan

Abstract

Purpose – This research attempts to reveal ways of addressing challenges in open universities related to empowering lifelong learning; establishing policies and strategies in dropouts, student portfolio, and support services for students with special needs; and implementing online instructional design and strategies. Two institutions were investigated, namely National Open University (NOU) Taiwan and Universitas Terbuka (UT) Indonesia, both founded in the 1980s to serve lifelong learners with diverse backgrounds and needs. This study was aimed at understanding good practices and challenges for improvement for the two open universities in those areas being investigated.

Design/methodology/approach – This research was qualitative using document analysis along with focus group discussions and interviews with administrators, academic staff, students, and alumni to collect data for analysis.

Findings – Lifelong learning is the necessity of individual in societies for continuing professional development through enabling access to quality university education. Open universities have been tasked to cater for lifelong learners using non-traditional approaches, new technology, and adapting to online learning and teaching in digital age. This research was exploratory, and the findings were expected to improve understanding of lifelong learning in open universities, particularly in NOU and UT.

Practical implications – Findings of this research are relevant to open universities to enhance its missions and define its possible new roles to serve lifelong learners.

Originality/value – This research reveals the roles of open universities in lifelong learning and enhances understanding of open universities that have a wide range of responsibilities in offering programs and courses to accommodate lifelong learners.

Keywords Lifelong learning, open university, student retention, student portfolio, support for students with special needs, online learning, instructional design and strategies

Paper type Comparative study

Introduction

Open universities are tasked to implement lifelong learning policies through open admissions of students from diverse backgrounds and qualifications to various programs and courses. Two open universities were investigated, namely National Open University (NOU) Taiwan and Universitas Terbuka

(UT) Indonesia. NOU has stated its vision, objectives and core competencies, and strategy to achieve the goal as an open university serving the needs of Taiwan society for lifelong learning (NOU, 2019). UT has been established to widen access to quality higher education for the citizens and promote lifelong learning for the people of Indonesia. UT has developed its vision to be a world-class open university and stated its major mission to make quality higher education open to all (UT, 2017; 2019a).

Lifelong learning are universal needs of societies manifested in various forms and models (Bajner, 2019; Perin and Brčić, 2014). Earlier, Choi (2008) analyzed five different models of lifelong learning internationally, comparing the welfare state, social partnership, network, market, and developmental state models. Open universities and lifelong learning seem to have intertwined with each other, as the establishment of open universities have been dedicated to serve the needs of lifelong learners (Daniel, 2019). Previously, Tait (2008) questions what the open universities are for and suggests the open universities' roles for the nation's development, embracing the functions of building capacity, providing individual opportunity, intervention to change the higher education system, and nation building, along with their traditional roles in teaching, research, and community services.

This study analyzes open universities and compares NOU and UT in terms of good practices and challenges for improvement in empowering lifelong learning, addressing questions on open university policies and strategies in dropouts, student portfolio, and support services for students with special needs; and online instructional design and strategies that best meet the needs for lifelong learners. The framework for the study may be illustrated in Figure 1, and findings of this study may present lessons learnt for possible considerations in other open universities.

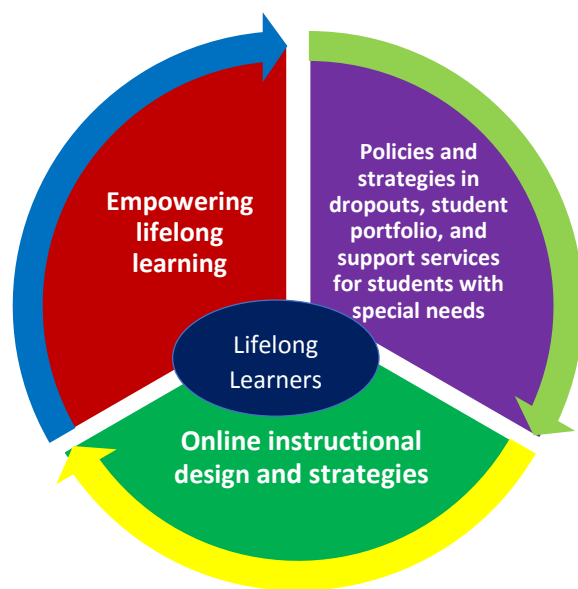


Figure 1. Conceptual framework for the study empowering lifelong learning

Lifelong learning in Taiwan and Indonesia contexts

Lifelong learning in higher education has evolved to become the focus of attention in both Taiwan and Indonesia with different emphases and ways of addressing the challenge. The issue of lifelong learning is closely intertwined with the challenge of higher education within each country. Both governments have

launched policies to address the needs of lifelong learners for continuing professional development in higher education to ensure sustainable development of both countries.

The Taiwan higher education system with 163 institutions enrolling over 1.3 million students has been confronted with the conflicting challenges of expansion, declining birth rates, and high admission rate at 97% (Huang, Chang and Liu, 2018). Distance education programs are common in Taiwan higher education institutions, and earlier during the year of 2000, there were 85 dual mode higher education institutions (56%) out of a total 153 institutions in Taiwan (Chen, 2002). Addressing the needs for lifelong learning in Taiwan has existed for years since the 1960s, and it has recently gained increasing attention by the government as indicated in Table I.

Table I. Development of lifelong learning policies and actions in Taiwan since the 1960s

Year	Development lifelong learning policies and actions in Taiwan since the 1960s
1960s	Concept of lifelong learning introduced
1970s - 1972 - 1973	UNESCO adopted the concept of lifelong learning <i>Learning to Be</i> by UNESCO <i>Recurrent education: A strategy for lifelong learning</i> by OECD
1970s - 1990s	Little focus on lifelong learning
1990s - 1996 - 1998	<ul style="list-style-type: none"> ✓ Impact of globalization ✓ Effects of an aging society ✓ Influence of information technology ✓ <i>Learning: the treasure within</i> by UNESCO ✓ <i>Towards a learning society</i> by Government of Taiwan
2000s	<ul style="list-style-type: none"> ✓ Starting to focus on lifelong learning ✓ New regulations for implementation of lifelong learning
2002	Lifelong Learning Act 2002 implemented in Taiwan
2011	Compulsory curriculum reform integrating elementary and secondary education into the twelve-year curriculum
2018	Implementation of twelve-year compulsory education with values shifting from knowledge to competencies in self-direction action, social participation, and communicative interaction
2019 onward	Challenges for NOU Taiwan in lifelong learning environment

Adapted and summarized from Chang, Wu and Lin, 2012; Chen and Huang, 2017

With advances in technology of the 21st century, the Taiwan government introduced in 2011 the compulsory curriculum reform, integrating elementary and secondary education into the twelve-year curriculum (Chen and Huang 2017). The twelve-year compulsory education curriculum, which was implemented beginning in 2018, has shifted values from knowledge to competency orientation, aiming to develop lifelong learners with three fundamental competencies in self-directed action, social participation, and communicative interaction in life situations (MOE, 2014 in Chen and Huang, 2017). The Taiwanese society has been further challenged with declining birth rates and increasing group of aging people up to 14% senior citizens (Lee, Hung and Tsai, 2014). Policy makers and educators in Taiwan have been thinking about the development of educational gerontology to address the challenges of an aging society (Huang, 2010), and to continue the development of a learning society through

lifelong learning (Wu and Chen, 2014). The curriculum reform for twelve-year compulsory education and increasingly aging society of Taiwan have challenged NOU roles in new lifelong learning environments.

For Indonesia, the challenge for lifelong learning is distinctive from that of Taiwan. Compulsory education for 9 years has been implemented since 1995. The Education Law of 1995 requests teachers to have relevant bachelor's degrees and certification to serve as teachers at relevant levels. The new technology and industry 4.0 in the digital age poses significant pressures for transformation in teaching and learning and development of competencies for the 4.0 sustainable employability. The higher education sector has been challenged to meet the needs of the society for the development of skills and competencies of the younger age cohorts for relevant employment. The higher education needs of Indonesia is served by 4,612 public and private institutions, enrolling 8.3 million students. Participation rate in higher education for the college-age groups of 18 to 24 years of age is at 32.5% in 2018, and it has been targeted to achieve 50% in 2040 (Ahmad, 2018; Pannen, 2018). UT as the only open university in the country has offered distance learning programs since 1984 to meet the lifelong learning needs of the citizens for quality higher education. The digital age of today has allowed other higher education institutions to offer distance education programs and courses online using new technology.

The diversified higher education system in Indonesia, including different types of public and private as well as national and religious institutions, have expanded to address the conflicting challenges in quality and quantity. The higher education system has been further confronted with challenges of access, inclusion, equity, modernization, and absorption of graduates in the work force. In terms of adult learning, participation rate in high school level education for the 15 to 18 years of age is over 80% (BPS, 2019). Literacy rates of adults and digital literacies have been a challenge to address for the specific education and training needs for lifelong learning. Further transformation in higher education in Indonesia has been the transition from campus-based or distance to digital learning which implies transformation in the teaching and learning methods and cultures of both educators and learners.

As the world is moving online, higher education institutions in digital age are challenged to transform themselves into providing digitally based teaching and learning support (Zorn, Haywood and Glachant, 2018). For open universities, transformation into online learning has impact on the way students learn, academics teach, and management develop policies to manage and support student learning. The work cultures of the digital age demand accurate, fast, and timely services, and transforming the work culture of staff members into digital culture prove to be one of the major challenges for open universities.

NOU and UT in lifelong learning

Founded in 1986 as the first university in Taiwan using a variety of media in teaching and learning (Hsieh, 2006), NOU Taiwan currently enrolls over 14,000 students in its 6 undergraduate programs and general education courses supported by 14 learning centers throughout the country. NOU has gone through transformation into various stages of development since 1986 from the nurturing, growing, flourishing, stability, challenging, transforming through its current state now (NOU, 2019). With the vision "to provide an inclusive, supportive, convenient, and responsive learning space for our students and society", NOU objectives are stated as the following: "Cultivate students to become citizens with civic consciousness and social responsibility; Equip students with the abilities to learn and develop positive attitudes of learning; Enhance students' abilities in life, social adoption, and appreciation of cultural diversity; and Foster students' professional competencies and potential for growth" (NOU, 2019). NOU core competencies focus on developing the students' values for citizenship, learning, life, and professionalism (NOU, 2019). Since 2005, NOU has developed its character as an online open

university designed to meet the needs of lifelong learners, using blended online learning supported with face-to-face and web-based support. It has recently undergone fundamental changes in information technology infrastructure, now using Taiwan-made learning management system as platforms to provide online interactions for students.

Established in 1984, UT has continued to be the pioneering leader of open, distance, and online learning in Indonesia, and it has since graduated over 1.7 million alumni with diplomas and degrees at undergraduate and post-graduate levels. Currently, more than 300,000 students enroll in UT, making it the largest open university in Southeast Asia in terms of student numbers. The UT has 4 Faculties and the Graduate Program, offering a total of over 48 Study Programs for lifelong learners at undergraduate and postgraduate levels. UT has 39 Regional Offices located in every province, and one Center dedicated to meet the needs of students residing in over 40 countries. In terms of information technology, UT has continued to transform itself from the traditional open and distance learning university to become a modern open and pioneering cyber university in Indonesia. It uses the latest version of Moodle, an open source e-learning platform for its online learning services. The number of students participating in online learning along with online interactivity among online tutors and students have continued to increase significantly in recent years along with the UT attracting younger groups of lifelong learners.

Review of literature and research

Lifelong learning has become necessities for individuals and societies. Integrating lifelong learning into higher education remains a serious challenge as it goes along with the changing cultures of the society and students, development of new technologies, and capacities of the higher education system. More effective lifelong learning has been enabled using technologies as tools in supporting learners (McIntosh and Varoglu, 2005). Lifelong learning and open universities go along hand in hand, as distance learning is seen as one of the answers to address the challenge for lifelong learning. Open universities have been closely associated with adult and lifelong learning, and many of those have been established by governments as an innovative way to cater for the needs of lifelong learners through non-traditional modes of teaching and learning (Tait, 2008; Jeong, 2018). The philosophies and missions of open universities remain relevant and enhanced in terms of meeting lifelong learning needs of today. New technologies and online learning seem to have converged the boundaries between distance and face-to-face learning modes to provide more flexible learning environments.

Recent trends in MOOCs (massive open online courses), OER (open educational resources), and OEP (open educational practice) play significant roles in enabling lifelong learning and are likely to have impact on the landscape of distance and online learning provision. Recent development of MOOCs suggests their potentials to draw large and diverse groups of participants with different needs for learning interests (Buhl and Andreasen, 2018). New visions for open universities may have to be redefined to respond to the changing landscape of higher education and needs of the society. OER and OEP are important catalysts of lifelong learning and continuing professional development for their abilities to reach out people to continuous learning (Ossiannilsson, 2019).

Empowering lifelong learning

Chickering (1994) highlights the importance of lifelong learning, emphasizes developing a life-span perspective in learning, and ensures meeting the needs for individuals to stay in continuous learning and professional development. Lifelong learning as a concept has been more recently described as a shifting move from freedom paradigm of the 1970s to necessity of individuals today as lifelong learners need to

continuously adapt to technological changes and professional requirements (Šimenc and Kodelja, 2016). There are trends to acknowledge through lifelong learning that adult education ensures societal sustainability and has the contribution to sustainable societies (Milana, Rasmussen and Holford, 2016).

Lifelong learning and distance education share right partnership and link to meet the needs of adult learners (McIntosh and Varoglu, 2005). Using technology, lifelong learning and distance education combined have the capability “to break the insidious link between quality and exclusivity” (Daniel, 2005). Recent research on lifelong learning from the future perspectives for teaching and learning has revealed shifts of focus from an institutional view to the learner and learning, which includes a range of lifelong, nonformal and informal learning processes (Cendon, 2018). Continuing professional development has become one of the key features of modern employment, in which the existing workforce upgrade qualifications and competencies. Lifelong learning has been a crucial part of the development of open universities that allow flexibility to accommodate working students beyond the traditional college-age population.

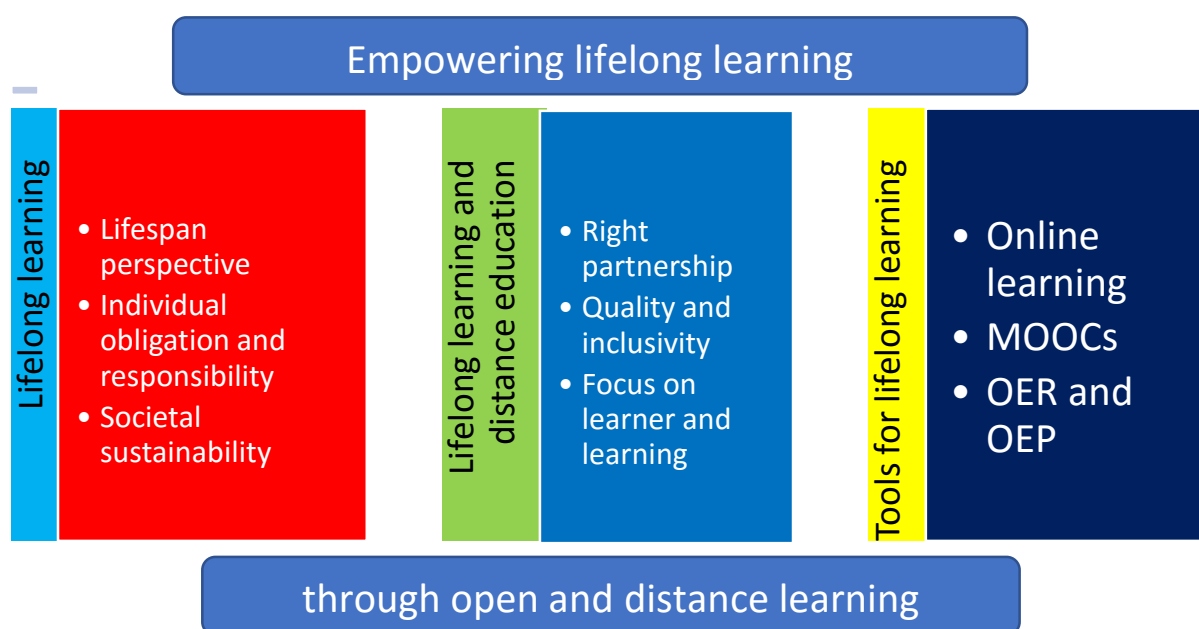


Figure 2. Framework for strategies in empowering lifelong learning through open and distance learning

New technologies allow the development of new format of distance learning through MOOCs (massive open and online courses). Face-to-face higher education institutions offer MOOCs for continuing professional development that may also be transferable to their existing study programs. Some MOOCs have allowed even larger numbers of participating students than those of open universities. It seems that MOOCs have offered a new fashion of lifelong learning, and open universities will have to adapt to new lifelong learning environments. Based on these literatures, the framework for strategies in empowering lifelong learning through open and distance learning may be illustrated in Figure 2.

Policies and strategies in dropouts

Making students learn and ensuring the quality of learning process have become the major goal of higher education institutions and open universities. Student retention in distance learning is comparatively poorer than that in the face-to-face mode of learning (Fozdar and Kumar, 2007), and

open universities have implemented policies and strategies to engage students' learning and ensure completion of studies. Studies in the Asian context have been conducted to reveal why students decide to pull out from studies and eventually drop out from courses, and to understand how institutions improve strategies in retaining students (Fan and Lee, 2006; Sembiring, 2017; Au, Li, and Wong, 2018).

Adult learner persistence has been investigated in different dimensions. A study in the United States revealed adult learner persistence in terms of participation in the program covering four major areas of activities, namely intake and orientation, instruction, counseling and peer support, and re-engagement, and concluded that persistence strategies and their outcomes derived their power from meeting these affective needs of adults, namely sense of belonging and community, clarity of purpose, agency, competence, relevance, and stability (Nash and Kallenbach, 2009). Findings of another study on adult persistence in online education at course level revealed three factors, namely previous online experience, desire to complete degree, and assignment completion, contributed to success in online learning, indicating that other factors might be linked to student persistence, such as student's perception of employer support and classmate communication throughout the study (McGivney, 2009). Findings of research in Indonesia indicated that persistence and loyalty, followed by future careers contributed to academic excellence (Sembiring, 2017). Student persistence in open and distance learning depend on different success factors for different groups of students (Au, Li and Wong, 2018).

New technologies help foster persistence in adult learning, as a study in India indicated that persistence in learning could be supported with the use of new technologies for learning (Fozdar and Kumar, 2007). Another study in Greece indicated that drop out in distance learning could be prevented using machine learning techniques, and concluded that "the learning algorithms predict dropout of new students with satisfying accuracy and thus become a useful tool in an attempt to prevent and therefore reduce dropouts" (Kotsiantis, Pierrakeas and Pintelas, 2003). Preventing students from dropouts is one major duty of open universities that admit students without selection into their undergraduate programs.

Student portfolio

Many adult learners are those experienced professionals. As new technology and lifelong learning converge, the needs for recognition of student portfolio and e-portfolio emerge (Baris and Tosun, 2011). Students can document records of their curriculum vitae, personal and professional development, new acquisitions of knowledge and competencies in portfolio that can be recorded in digital format (Baris and Tosun, 2011). Higher education institutions have interests and obligations to recognize prior learning of students as credits for their studies. Open universities that empower lifelong learning are to be at the forefront of implementation student portfolio to facilitate student. Open universities are challenged to ensure effective implementation of student portfolio and find ways and means to apply it effectively.

Support services for students with special needs

Open universities accommodate a wide range of students with different backgrounds and needs, including those students with special needs. Distance learning materials, learning and administrative services, and examinations are to be designed specifically to ensure accessibility by those students with special needs. Technology can facilitate the learning process of students with disabilities, as indicated by the research findings by Muzata (2013) that students' high appreciation of audio materials help them improve their learning performance through content retention, passing of examinations, improved study habits, and ease of access. The study further revealed that students with visual problems found

the audio materials helpful in the learning process (Muzata, 2013). Distance learning has also been applied in pre-secondary education to assist in the education and rehabilitation of children with special needs using new technology to enable the widening of accessibility to education for children and adults with disabilities so that learning process could take place in flexible mode to suit the special needs of students (Singh and Agarwal, 2013).

Social inclusion is an important issue in educational participation at all levels. Distance and online learning systems have the characteristics that improve social inclusion and enable the potentials to open access to education for people with access to the technology. Further research is needed to look at the potential impact of online and distance education for students with disabilities in higher education (Erickson and Larwin, 2016). Open universities vary in terms of the range of support services for students with special needs. The first step to do by the open universities is to identify those students with special needs and their implications for the provision of academic and support services. Accurate information is needed to address the students with special needs in terms learning design, support, and examination as well as the kinds of media, learning facilities, and infrastructure needed for those groups of students.

Online learning design and strategies

As higher education system evolves and technology advances, instructional design has become an evolving field (Beirne and Romanoski, 2018). Models for online learning design has been put forwards by Chen (2016) who proposed the ICCEE (identify, choose, create, engage, evaluate) model that provides online educators with an effective guidance and checklist when designing online learning materials. According to (Chen, 2016, p. 2307), “a proper implementation of the model can support online student’s engagement, involvement, motivation, and focus on learning”. The goal of online instructional design model is “to assist online instructors to better design online courses or lessons, to facilitate online students focusing on their learning, and to promote active teaching and learning” (Chen, 2016, p. 2307). Instructional design and strategies in distance and online learning is fundamental, considering the backgrounds of the students who are diverse in terms of age, experiences, circumstances, and choices of media for learning. Some students may opt to study from home, or from the workplace, and some students may prefer studying in groups or as individuals independently.

Methods of the study

A qualitative research method was used in this study, involving document analysis, interviews, and focus group discussions addressing the areas on empowering lifelong learning; policies and strategies in dropouts, student portfolio, and support services for students with special needs; and online instructional design and strategies. Preliminary data and information were collected from documents from both institutions for analysis, followed up by interviews and focus group discussions with management, staff, students, and alumni (See Appendix. List of people consulted at NOU Taiwan).

Administrators, academic members, students, and alumni were asked questions related to issues being investigated for the purpose of the study through focus group discussions of the respective respondents and in individual interviews. During the focus group discussions and interviews, questions were asked on various issues on empowering lifelong learning, policies and strategies in dropouts, student portfolio, and support services for students with special needs, and online instructional design and strategies.

Responses were then analyzed and categorized so that findings of the study could be presented. Both institutions were analyzed in terms of good practices and challenges for improvement in those mentioned areas being investigated.

This study replicated the research methods and some of the comparative institutional dimensions investigated in previous study on learner support in open and distance learning in another context in the Open University of Sri Lanka (OUSL) and UT (Zuhairi, Karthikeyan and Priyadarshana, 2019). Despite similarities in research methods with the previously conducted research, this present study nevertheless focuses on lifelong learning through open universities, exploring different research areas from the previous study in a different context focusing on learning support.

Findings

Findings of this study revealed good practices and challenges for improvement, that may be relevant to both open universities under investigation and similar institutions in other contexts. Comparative aspects revealed in the findings include the characteristics of NOU and UT as open universities; empowering lifelong learning; retaining students, student portfolio, and students with special needs; and implementing online instructional design and strategies. As mentioned before, a similar comparative research on OUSL and UT on learner support in open and distance learning was previously conducted just one month earlier than this present study. Therefore, some information on several dimensions of UT presented in the findings of this present study was updated and adapted based on the earlier findings of the previous comparative study on learner support in OUSL and UT conducted by Zuhairi, Karthikeyan and Priyadarshana (2019). This present study specifically investigated various aspects of life learning through open universities and presented findings addressing questions on various dimensions of lifelong learning of NOU and UT.

NOU and UT as institutions

Both NOU and UT are the products of the 1980s when governments established open universities to address the needs for lifelong learning in higher education for their populations, following the success of the United Kingdom Open University (UKOU) established in 1969. Like many open universities of the world, both NOU and UT have made significant contributions to widen access to quality higher education reaching everybody from various social economic backgrounds and geographical locations unreached by the conventional system of higher education. Findings of this NOU and UT institutional comparative study may seem to illustrate some of the common achievement of open universities in terms of the development mission as described by Tait (2008), the sustainability of their unique features as explained by Jeong (2019), and the relevance to societal needs as suggested by Daniel (2019). Both NOU and UT also indicate their differences in ways of addressing their challenges in the changing landscape of higher education in digital age in their respective contexts. Table II presents the comparative institutional profiles and indicators of NOU and UT.

Table II. Institutional profiles and indicators of NOU and UT

Aspects	NOU	UT
Date established	1 August 1986	4 September 1984
Area served	National and global	National and global
Language of instruction	Chinese Mandarin	Bahasa Indonesia

Aspects	NOU	UT
Client	Undergraduates and lifelong learners	Predominantly degree students at bachelor, master, and doctoral levels
Faculty/School	6	4
Study Programs	6	48
Post-graduate programs	Not permitted by government	7 Master + 2 Doctoral
Undergraduate programs	6	40
Courses	400	1,257
Head Office	Taipei	Tangerang Selatan
Regional Offices/Learning Centers	14	39 Regional Offices +1 Overseas Student Center
Quality assurance system	National accreditation	Internal quality assessment mechanism, and external quality assessment by ISO, International Council for Open and Distance Education (ICDE), and National Accreditation Board of Higher Education (BAN-PT)
Students registered	14,391	302,484
Students without high school certificates	2,398 (16.66%)	Not Available
Students unemployed	2,491 (17.31%)	25,572 (8.45%)
Students female	9,058 (63%)	196,000 (67%)
Alumni total	40,000	1,726,515

Taken and adapted from: UT, 2019a; Zuhairi, 2019; NOU, 2019.

Good practices of NOU and UT as institutions

Findings of this study reveal good practices of both institutions in areas related to the institution character, core value, principles, missions, study programs offered, provision of academic services, teaching and learning responsibility, tuition fees, and major roles in each of NOU and UT. Both institutions serve leading roles in implementing MOOCs for NOU, and in delivering OER, OEP, MOOCs, and cyber university for UT. NOU has positioned itself as a lifelong learning institution with an aim to become the paragon for lifelong learning for the global Chinese. Each of the institutions has thrived to address the specific needs of the societies of their respective countries and have evolved to establish specific characters that are unique for their respective contexts. These findings may well illustrate the resilience of open universities' original values of the pioneering United Kingdom Open University "open as to people, open as to places, open to methods and open as to ideas" as stated by Lord Crowther back in 1969 (in Daniel, 2019), and their potential capabilities to enjoy the advantage of "the iron triangle of access, cost, and quality" through open and distance learning as described by Daniel (2019). Table III indicates good practices of NOU and UT as open university institutions.

Table III. Good practices of NOU and UT as institutions

Aspects	NOU	UT*
Institution character	✓ Open online university	✓ Open and distance teaching university serving as a pioneering role to be a cyber

Aspects	NOU	UT*
	<ul style="list-style-type: none"> ✓ Blended with face-to-face sessions and web-based conferences ✓ Online learning starting in 2005 	<ul style="list-style-type: none"> university (Darojat <i>et.al.</i>, 2018; Darojat, 2019) ✓ Use of a combination of learning support including online, web-based, and face-to-face tutorials ✓ Online tutorials starting in 1999
Core value	Providing quality open and online higher education to lifelong learners	Making quality higher education open to all
Principles	Inclusive, Supportive, Convenient, Responsive	Quality, Integrity, Innovation, Accessibility, Relevance, Accountability
Missions	Reach out adults and lifelong learners	Reach out high school graduates, adults, those living in remote and rural areas, and everybody
Study programs offered	A limited range of undergraduate programs in Social Sciences, Living Sciences, Public Administration, Management Information, Business, Liberal Arts, and General Education Courses	A wide range of programs with very large number of students at all levels in 4 Faculties and The Graduate Program, and a total of 48 Study Programs at bachelor, master, and doctoral qualification levels (UT, 2019)
Provision of academic services	<ul style="list-style-type: none"> ✓ Provide academic services using its own resources in terms of academic staff, human resources, infrastructure, and facilities ✓ Provide distance students with learning materials in printed and digital formats 	<ul style="list-style-type: none"> ✓ Provide academic services supported with close partnerships with relevant institutions for academic services to its distance students ✓ Use resources of partner institutions, such as academic staff and practitioners serving as tutors and supervisors, examination proctors ✓ Use of infrastructure and facilities within easy access to its students to support students in face-to-face tutorials, practice, and practicum, and to conduct examination ✓ Provide distance students with learning materials in printed and digital formats
Teaching and learning responsibility	<ul style="list-style-type: none"> ✓ Academic staff responsible to schools for mediated, face-to-face, online teaching duties, and research activities 	<ul style="list-style-type: none"> ✓ Teaching and learning as shared responsibilities of the institutions involving academic staff members and practitioners from other institutions ✓ Face-to-face, online and mediated tutorial support by professionally trained tutors from UT's own academic staff and many more from other institutions ✓ Monitoring and supervisory roles of teaching and learning using certain quality criteria by the UT academic members of staff
Tuition fees	Rely on student fees and government funding, cheaper fees for NOU students, half the	Rely mostly on student fees and limited funding from the government, manage services

Aspects	NOU	UT*
	fees of the face-to-face universities	effectively, and known as charging the lowest fees among universities in Indonesia
Major roles	<ul style="list-style-type: none"> ✓ A lifelong learning institution with an aim to become the paragon for lifelong learning for the global Chinese ✓ A major center for MOOCs in lifelong learning for Taiwanese people 	<ul style="list-style-type: none"> ✓ Pioneering roles as cyber university (Darojat <i>et.al.</i>, 2018; Daroijat, 2019) in providing online courses for students from other institutions ✓ A leading institution in implementing OEP, OER, and MOOCs

*Updated and adapted from Zuhairi, Karthikeyan, and Priyadarshana (2019)

Challenges for improvement of NOU and UT as institutions

Based on the philosophies of openness, access, equality, and quality, open universities are open to improvement of their teaching and learning methods and ways of meeting the needs of lifelong learners (Zuhairi, 2019). As a lifelong learning institution for the global Chinese, NOU has challenges to address in responding to the competition from other higher education institutions in Taiwan to continue to recruit students with special needs that other universities may not have the capabilities to do. NOU is currently in negotiation with the government to lift the ban to allow NOU to recruit students overseas and strengthen cooperation with international OUs. Both NOU and UT are confronted with the challenges for improvement to respond to the needs of the students and stakeholders in terms of students and study programs; integrating online learning; new technology, staff training and workload; MOOCs, OER, and OEP; and partnerships. Both open universities seem to have moved into the right directions in addressing the implementation of OER and OEP as catalyst for lifelong learning as illustrated by (Ossiannilsson, 2019). These diverse needs of lifelong learners have impact on the way NOU and UT may have to address these challenges for improvement in empowering lifelong learning as presented in Table IV.

Table IV. Challenges for improvement of NOU and UT

Aspects	NOU	UT*
Students and study programs	<ul style="list-style-type: none"> ✓ Accommodate larger number of students with different needs for different study programs and courses relevant to continuous professional development and competencies for the industry 4.0 and beyond ✓ Consider offering post-graduate courses to meet certain employment and industry needs 	<ul style="list-style-type: none"> ✓ Serve more distributed and very large number of students with different needs, conditions, and access to information and communication technology ✓ Offer degree and non-degree programs and courses for lifelong learners that are relevant to the needs of employers and competencies for the industry 4.0 and beyond ✓ Improve services to diverse groups of students with different needs and access to various modes of distance, face-to-face support, and online services

Aspects	NOU	UT*
Integrating online learning	<ul style="list-style-type: none"> ✓ Continuously improve online learning services enriched with face-to-face and mediated academic support to enhance student learning experiences ✓ To be competitive among online learning providers 	<ul style="list-style-type: none"> ✓ Implement stepwise transformation into online and cyber university ✓ Address conflicting interests among staff, students, and stakeholders as regards to adoption of digital technology for teaching and learning ✓ Stay ahead in competition among online learning system providers
New technology, staff training and workload	<ul style="list-style-type: none"> ✓ Continuously update technologies for teaching and learning and assessment, and for management ✓ Enhance staff training in new technology for various modes of online teaching learning and assessment ✓ Reconsider the number of academic staff and their workloads and explore possible substitute academic human resources needed through partnerships 	<ul style="list-style-type: none"> ✓ Incorporate more uses of new technologies to enrich learning experience of students with different conditions, and for management ✓ Reorient and enhance staff training in new technology for various modes of online teaching learning and assessment to develop staff competencies in online teaching and learning ✓ Reconsider the number of academic staff and their workloads and strengthen academic staff competencies in online teaching and academic activities
MOOCs, OER and OEP	<ul style="list-style-type: none"> ✓ Strengthen capacity building for staff and the institution in MOOCs, OER and OEP ✓ Enhance the uses of MOOCs, OER to widen access to lifelong learning by wider communities 	<ul style="list-style-type: none"> ✓ Develop and strengthen capacity building for staff and the institution in MOOCs, OER and OEP ✓ Encourage academic staff and tutors to use OER to enrich student learning ✓ Develop MOOCs to expand wider communities to access lifelong learning
Partnerships and collaboration	Consider establishing partnerships and collaboration to strengthen institutional capacity	Strengthen partnerships and establish core academic infrastructure and facilities to support student studying various programs and courses in different regions

*Updated and adapted from Zuhairi, Karthikeyan, and Priyadarshana (2019)

Good practices in lifelong learning

Both NOU and UT have performed their respective tasks of widening access to quality university studies to the citizens of their respective countries. NOU focuses on meeting the needs of lifelong learners at the undergraduate levels, including accommodating those 16% of its total student population without high school certificates (NOU, 2019). On the other hand, UT focuses on widening opportunities for the citizens to pursue quality university studies in various programs and levels. UT also allows for flexibility and possibility for students to pursue lifelong learning courses without formal high school certificates through studying loose courses that are transferable to the degree programs, when students can show their high school certificates. UT students are mostly degree students at undergraduate level, and fewer post-graduate and diploma students. These findings indicate relevance to good practices of other open universities in terms of open educational practice for lifelong learners (DeVries, 2019). Table V indicates

good practices of NOU and UT in lifelong learning in aspects related to institution purpose, student needs, degree requirements, and admission and study duration policy.

Table V. Good practices in lifelong learning in NOU and UT

Aspects	NOU	UT
Institution purpose	Oriented to lifelong learners – described by one NOU student as “a nice place to learn”	Open university for everybody
Student needs	Learning for life for continuing professional development, not necessarily for degrees or diplomas but also through open loose courses for competency development	Students taking courses mostly in degree or diploma programs and open loose courses for continuing professional development
Degree requirements	<ul style="list-style-type: none"> ✓ Students may enroll in any of the courses ✓ Students may eventually choose a major and meet the requirements to graduate with a degree 	<ul style="list-style-type: none"> ✓ Students mostly enroll in Study Programs for degrees (diploma, bachelor, master, or doctorate) right from the beginning ✓ Students may enroll in any of the loose courses and transfer credits to a Study Program and meet the requirements for degrees of the Study Programs ✓ High school certificates are required for the undergraduate degrees or diplomas to be awarded
Admission and study duration policy	<ul style="list-style-type: none"> ✓ Open admission to all, including those without high-school certificates, in its undergraduate programs and courses ✓ Lifelong learning, no dropout 	<ul style="list-style-type: none"> ✓ Open admission to all, including those without high-school certificates, particularly in loose courses; the high school certificates are needed for the awards of undergraduate degrees or diplomas ✓ Lifelong learning, no dropout, impacting on accreditation as a challenge ✓ Selection tests apply in master and doctoral programs

Challenges for improvement in lifelong learning

NOU and UT have evolved as pioneers in lifelong learning continuously adapting to advances in information technology to enhance student learning, despite their distinctive challenges for improvement. In terms of impact and effects, NOU seems to develop programs and courses to meet the needs of lifelong learners that have direct effects relevant to their professional competencies. On the other hand, UT students mostly enroll in degree programs that have long-term civil effects and are parts of their continuing professional development. In terms of scale and scope, NOU provides national and global services and has the potentials to take more students into its online learning programs and courses. UT has proved to be effective in large-scale operations providing services to the citizens within the national boundaries and need to expand further to accommodate more citizens living globally. As illustrated by Bates (2019) and Zorn, Haywood, and Glachant (2018), adapting swiftly to the new

fashions of teaching and learning in digital age to reach larger number of students will be one of the major challenges for both institutions. Table VI indicates common challenges for improvement in lifelong learning shared by NOU and UT in aspects related to the roles of open universities, new technology, training for staff and students in digital age, and competencies for industry 4.0.

Table VI. Common challenges for improvement in lifelong learning for NOU and UT

Aspects	Common challenges for improvement for NOU and UT
Roles of open universities	<ul style="list-style-type: none"> ✓ Redefine roles of open universities, as technology advances and job requirements and competencies change ✓ Redesign programs and courses to meet the industry 4.0 requirements ✓ Educate students to enable students to become what they want to become in a changing world, or “Learning to Become” (UNESCO, 2019)
New technology	<ul style="list-style-type: none"> ✓ Invest in new technology for teaching and learning and management ✓ Enhance the use of technology with continuous training for students and staff ✓ Transformation into open online or cyber university demands new teaching and learning designs and strategies
Training for staff in digital age	<ul style="list-style-type: none"> ✓ Train and retrain staff in technology for teaching and learning in digital age ✓ Transform the teaching culture of staff in digital education ✓ Continuously upgrade staff competencies in new approaches of teaching and learning in digital age ✓ Develop management and staff attitudes and action plans to make new technology work effectively for teaching and learning and management in digital age ✓ Continuously develop digital literacies, competencies, and empathy of staff with new technology in teaching and learning and management
Training for students in digital age	<ul style="list-style-type: none"> ✓ Train and retrain students in technology for learning in digital age ✓ Transform the learning culture of students in digital learning ✓ Develop attitudes and stepwise orientation to students to ensure new technology is used effectively in for learning in digital age ✓ Continuously develop digital literacies and competencies of students in digital learning
Competencies for industry 4.0	<ul style="list-style-type: none"> ✓ Students learn from well-designed programs and courses that develop the competencies and skills needed for the industry 4.0 world of work ✓ Prepare students and graduates for the industry 4.0 job requirements ✓ Develop the professional life skills and lifelong learning attitudes for the industry 4.0

Good practices in retaining students, student portfolio, and students with special needs

Diversity in backgrounds and choices for students in terms of programs, courses, and modes of learning support have implications on the ways and means NOU and UT address the needs of their students and stakeholders. Both NOU and UT share common good practices particularly in the areas of learning support and student portfolio. In terms of learning support, both open universities provide continuous learning and tutorial support using online, mediated, and face-to-face modes to suit the needs of the students. In terms of recognition of prior learning, both OU and UT recognize previous professional

experiences and courses taken from other institutions to be transferable to their open university programs. Table VII indicates distinctive good practices in aspects related to prevention from dropout, information on course selection, counseling, and students with special needs.

Table VII. Good practices in retaining students, student portfolio, and students with special needs

Aspects	NOU	UT
Prevention from dropout	<ul style="list-style-type: none"> ✓ No limit of study, no dropout ✓ Flexibility to students ✓ Student learning guide ✓ Online, mediated, face-to-face, and individual support for learners ✓ Counselling 	<ul style="list-style-type: none"> ✓ No limit of study, no dropout ✓ Flexibility to students ✓ Use of Contact Center ✓ Face-to-face and online counseling by Study Program ✓ Study groups among students
Information on course selection	Provide information on course selection, computer system operation, and course objectives for students to access online and assist students to continue their studies	Provide information on the course selection in the Catalog and leaflets, and guidance during registration
Counseling	Provide guidance and counseling for students' homework and life matters, including tutor system, joint service center and telephone care	Provide guidance and counseling face-to-face, online, and using other media via Contact Center
Student portfolio	<ul style="list-style-type: none"> ✓ Recognize prior learning of students transferable to programs 	<ul style="list-style-type: none"> ✓ Recognize prior learning of students transferable to programs ✓ Accommodate many transfer students from many other institutions
Students with special needs	<ul style="list-style-type: none"> ✓ Provide support for students with special needs and disabilities ✓ Use of new technology to support students with special needs and disabilities ✓ Clear guidelines and procedures to support students with special needs and disabilities ✓ Dedicated unit responsible for students with special needs and disabilities 	<ul style="list-style-type: none"> ✓ Accommodate students with special needs and disabilities ✓ Limited use of new technology to support students with special needs and disabilities ✓ Develop guidelines and procedures to support students with special needs and disabilities ✓ Need to develop a unit dedicated to students with special needs and disabilities

Challenges for improvement in retaining students, student portfolio, and students with special needs

Both NOU and UT systems have been continuously challenged to retain students, address the specific necessities for student portfolio, and meet the expectations of students with special needs. Retaining students and ensuring persistence of students to complete courses are common challenges for open universities. The two open universities also share common challenges for improvement in retaining students, student portfolio, students with special needs, and overall challenges as indicated in Table VIII.

Table VIII. Common challenges for improvement in retaining students, portfolio, and special needs

Aspects	Common challenges for improvement for NOU and UT
Retaining students	<ul style="list-style-type: none"> ✓ Ensure public accountability to ensure students graduate from the open universities ✓ Improve productivity measures of the institutions in terms of student numbers enrolled and graduated ✓ Address accreditation issues as assessment for accreditation may be biased against open and distance learning ✓ Find ways to identify learners with predicted possibilities to dropout and take preventive actions ✓ Use learning analytics to help students succeed in learning ✓ Provide mentoring and tutoring system to assist students to prevent them from dropout
Student portfolio	<ul style="list-style-type: none"> ✓ Design an effective system that allows for implementation of student portfolio in teaching and learning and assessment ✓ Ensure standard for recognition of prior learning ✓ Employ quality assurance system for credit transfer from different institutions with quality standards ✓ Develop standardized measures for student portfolio assessment and credit transfer
Special needs	<ul style="list-style-type: none"> ✓ Support for students with special needs in large scale for all courses ✓ Invest in new technology and intelligent system to support students with special needs
Overall challenges	<ul style="list-style-type: none"> ✓ Consistent implementation of policies on retaining students, student portfolio, and students with special needs ✓ Continuously improve the system on retaining students, student portfolio, and students with special needs support to students with special needs

Good practices in online instructional design and strategies

Both NOU and UT implement good practices in online instructional design and strategies that are suitable to the specific conditions of their learners. For UT, providing access and flexibility is paramount and both distance and online students need to be accommodated in accordance with their individual circumstances and conditions. Table IX indicates good practices in instructional design and strategies in aspects related to new student orientation, online instructional design, online support and peer learning, and student online learning activities.

Table IX. Good practices in online instructional design and strategies

Aspects	NOU	UT*
New student orientation	<p>New student orientation and mentoring for first year online students include the following information on</p> <ul style="list-style-type: none"> ✓ Mentor system, in which 1 mentor for 30 to 70 students per class during the first semester ✓ Student affairs ✓ E-learning platform ✓ Assignments ✓ Examination ✓ Credit transfer ✓ Face-to-face for half a day 	<ul style="list-style-type: none"> ✓ New Student Orientation one day face-to-face training on introduction to distance learning, facilities, support and services provided to students ✓ Development of Distance Learning Skills one day face-to-face training on effective reading and online learning system ✓ Orientation on learning clinics to provide student guidance and counselling based on the needs of distance students
Online instructional design	<ul style="list-style-type: none"> ✓ Course plan to be approved by University Committee ✓ Fully online course plan on webpage <ul style="list-style-type: none"> ▪ Learning content ▪ Synchronous communication ▪ Video conference ▪ Discussion forum ▪ Assignment ✓ Faculty as media expert ✓ University wide general strategy ✓ Examination (Oral, Written) ✓ Different kinds of assessment 	<ul style="list-style-type: none"> ✓ Course plan to be approved by Head of Study Program ✓ Online tutorial components including the followings <ul style="list-style-type: none"> ▪ Introduction ▪ Initiation ▪ Explanation ▪ Questions to discuss ▪ Discussion ▪ Assignments ▪ Feedbacks ✓ Head of Study Program in supervisory roles ✓ University wide general format ✓ Examination <ul style="list-style-type: none"> ▪ Three assignments ▪ Paper-based semester examination ▪ Comprehensive examination towards the end of undergraduate programs ▪ Thesis examination in post-graduate programs
Online support and peer learning	<ul style="list-style-type: none"> ✓ Online discussion forum and access to academic staff and resources ✓ Peer learning in online learning environment 	<ul style="list-style-type: none"> ✓ Online discussion forum, access to Contact Center ✓ Peer learning in online tutorials
Student online learning activities	<ul style="list-style-type: none"> ✓ Online students as independent and autonomous learners ✓ Learn from the materials provided in digital and printed formats 	<ul style="list-style-type: none"> ✓ Online and distance students as independent and autonomous learners ✓ Register in online tutorial courses ✓ Study the learning materials sent to students in digital and printed formats

Aspects	NOU	UT*
	<ul style="list-style-type: none"> ✓ Interact with lecturers and peer students online ✓ Work on assignments or reports as according to the course requirements through e-learning platform ✓ Sit for computer-based mid-term tests and final semester examinations 	<ul style="list-style-type: none"> ✓ Interact with the tutor and peer students in online tutorials ✓ Work on three assignments ✓ Sit for paper-based or online-based semester examination

*Updated and adapted from Zuhairi, Karthikeyan and Priyadarshana (2019)

Challenges for improvement in on online instructional design and strategies

Both NOU and UT have distinctive features in terms of online learning cultures. These differences can be found in terms of students' online activities in which NOU covers all 100% of the students learning online, while UT includes only around 50% of the students learning online. Both NOU and UT are challenged to improve learning engagement among their online students. UT is further challenged to find effective ways for students to access online learning, involving stakeholders to upgrade the internet and technology infrastructure to allow for the continuous improvement of online access by students. As described in Table X, both NOU and UT share common challenges in online instructional design and strategies in aspects related to design for online learning, quality assurance, fully online courses, OER and MOOCs, and research.

Table X. Challenges for improvement in online instructional design and strategies

Aspects	Challenges for improvement for NOU and UT*
Design for online learning	<ul style="list-style-type: none"> ✓ Continuously improve online instructional design and strategies ✓ Improve the design for effective online learning engagement
Quality assurance	<ul style="list-style-type: none"> ✓ Implement quality assurance system in the design, development, and delivery of online learning courses
Fully online courses	<ul style="list-style-type: none"> ✓ Ensure fully online courses and programs integrating teaching and learning and assessment ✓ Continuously improve and expand online courses
OER and MOOCs	<ul style="list-style-type: none"> ✓ Use OER to enrich students' online learning experience ✓ Use OER to improve of the quality of online learning ✓ Develop MOOCs to promote fully online learning courses
Research	<ul style="list-style-type: none"> ✓ Conduct research and development in online instructional design and strategies

*Updated and adapted from Zuhairi, Karthikeyan and Priyadarshana (2019)

Conclusion

The findings of the research lead to conclusions that renew our understanding of empowering lifelong learning; establishing policies and strategies in dropouts, student portfolio, and support services for student with special needs; and implementing online instructional design and strategies in open universities with specific reference to NOU Taiwan and UT Indonesia. Good practices and challenges for

improvement of NOU and UT in areas being investigated may be able to assist policy makers and administrators to develop action plans that may benefit both NOU and UT and relevant open universities elsewhere.

It is important to note some of the common natural characters of open universities and their potential future directions. First, open universities have been designed to serve the needs of the society for lifelong learning. Second, open universities in digital age are destined to reconsider its roles and responsibilities, adapt to new technology, respond to societal needs for development, and continuously improve the quality of its programs and services. Third, in digital age there seems to be no more difference between open and campus-based universities, and both kinds of institutions are challenged to develop the competencies of lifelong learners using digital learning technologies. It will remain with the leaders and the people of those universities to move forward the institutions into their rightful directions. As suggested by Tait (2018), the future directions of open universities are challenged to accomplish mass higher education achievement, continuous innovation and quality improvement, and improved technology for teaching and learning.

The roles of open universities for the nation's development as earlier proclaimed by Tait (2008) remain relevant today. The open universities in different parts of Asia and probably the world, despite bearing the same name, may be distinctive in many respects in terms of institutional cultures, teaching and learning methods, programs and courses offered, stakeholders' interests, and types of students served. These unique features may have originated from the state policies that govern the directions of each of the respective institutions, employment requirements, and societal needs. Some open universities including UT are comprehensive universities offering a whole range of degree programs and courses at undergraduate and post-graduate levels, while an open university such as NOU has been tasked by its government to provide undergraduate programs and courses, and emphasize on serving the needs of lifelong learners for continuing professional development. Despite their distinctive features, all open universities have continuously expanded ways and means of providing access to quality university education for lifelong learners irrespective their social, cultural, and economic backgrounds.

During the past 50 years since the establishment of the first Open University in the United Kingdom, the higher education landscape has changed thanks to advances in technology, changing competency requirements in employment, and professional development needs. The blurring boundaries of open universities and the campus-based institutions in digital age challenge open universities to anticipate changing demography and needs of the clients, develop collaboration with other institutions and the world of work, use MOOCs and OER to improve learning, and continuously enhance their academic status (Guri-Rosenblit, 2019). Responsibilities remain with the open universities to develop strong leadership able to chart their future directions and address issues related to challenging policy environments, quality and reputation, institutional change and digital revolution, and sustainability across the institution (Tait, 2018). Open universities worldwide need to address these issues seriously to ensure sustainability as reputable higher education institutions with high academic status.

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References

Ahmad, I. (2018), Indonesia good practices on QA, recognition and student mobility programs. Presentation by Acting Director General of Learning and Student Affairs, Ministry of Research, Technology, and Higher Education, 4 June 2018.

[Au, O.](#), [Li, K.](#) and [Wong, T.](#) (2018), "Student persistence in open and distance learning: success factors and challenges", *Asian Association of Open Universities Journal*, Vol. 13 No. 2, pp. 191-202, DOI: <https://doi.org/10.1108/AAOUJ-12-2018-0030>.

Bates, A.W. (2019), *Teaching in a Digital Age – Second Edition*, Tony Bates Associates Ltd, Vancouver, available at: <https://pressbooks.bccampus.ca/teachinginadigitalagev2/> (accessed 20 January 2020).

Bajner, M. (2019), "Lifelong learning redefined: from sustainability to generational learning", *Andragoška spoznanja/Studies in Adult Education and Learning*, Vol. 25, No. 3, pp. 35-45, DOI: <http://dx.doi.org/10.4312/as.25.3.35-45>

Baris, M. F. and Tosun, N. (2011), "E-portfolio in lifelong learning applications", *Procedia - Social and Behavioral Sciences*, Vol. 28, pp. 522–525, DOI: <https://doi.org/10.1016/j.sbspro.2011.11.100>.

Beirne, E. and Romanoski, M. P. (2018), "Instructional design in higher education: defining an evolving field", *Online Learning Consortium (OLC) Outlook: An Environmental Scan of the Digital Learning Landscape July 2018*, available at: <https://olc-wordpress-assets.s3.amazonaws.com/uploads/2018/07/Instructional-Design-in-Higher-Education-Defining-an-Evolving-Field.pdf> (accessed 18 February 2019).

BPS. (2019), *Angka Partisipasi Kasar (APK) SMA/SMK/MA/ Sederajat Menurut Jenis Kelamin, 2015 – 2018 (Participation Rate in High School Level Education by Sex, 2015-2018)*, available at: <https://www.bps.go.id/dynamictable/2018/06/05/1432/angka-partisipasi-kasar-apk-sma-smk-ma-sederajat-menurut-jenis-kelamin-2015---2018.html> (accessed 10 December 2019).

Buhl, M. and Andreasen, L. B. (2018), "Learning potentials and educational challenges of massive open online courses (MOOCs) in lifelong learning", *International Review of Education*, Vol 64, pp. 151–160, DOI: <https://doi.org/10.1007/s11159-018-9716-z>.

Burgstahler, S. (2015), "Opening doors or slamming them shut? Online learning practices and students with disabilities", *Social Inclusion*. Vol. 3, No. 6, pp. 69-79, DOI: <http://dx.doi.org/10.17645/si.v3i6.420>.

Cendon, E. (2018), "Lifelong learning at universities: future perspectives for teaching and learning", *Journal of New Approaches in Educational Research*, Vol. 7, No. 2, pp. 81-87, DOI: <https://doi.org/10.7821/naer.2018.7.320>.

Chang, D., Wu, M. and Lin, S. (2012), "Adults engaged in lifelong learning in Taiwan: Analysis by gender and socioeconomic status", *Australian Journal of Adult Learning*, Vol. 52, No. 2, pp. 310-335.

Chen, L. (2016), "A model for effective online instructional design", *Literacy Information and Computer Education Journal (LICEJ)*, Vol. 6, No. 2, pp. 2303-2308.

Chen, H. S. and Huang, H. (2017), *Advancing 21st Century Competencies in Taiwan*. Asia Society Center for Global Education and National Taiwan Normal University, Taipei.

Chen, Y. J. (2002). "The development of cyber learning in dual-mode: higher education institutions in Taiwan", *The International Review of Research in Open and Distributed Learning*, Vol. 2, No. 2, pp. 1-15, DOI: <https://doi.org/10.19173/irrodl.v2i2.59>

Chickering, A. W. (1994), "Empowering lifelong self-development", *NACADA Journal*, Vol. 14, No. 2, pp. 50-53.

Choi, S. (2008), "Different models of lifelong learning: from the perspective of international comparison", *KEDI Journal of Educational Policy*, Vol. 5, No. 1, pp. 83-105.

Daniel, J. (2005). "Preface", in McIntosh, C. and Varoglu, Z. (Eds.), *Distance Higher Education and Lifelong Learning*, pp. ix-x, Commonwealth of Learning and UNESCO, Vancouver and Paris

Daniel, J. (2019). "Open Universities: old concepts and contemporary challenges", *International Review of Research in Open and Distributed Learning*, Vol. 20, No. 4, pp. 195–211, DOI: <https://doi.org/10.19173/irrodl.v20i3.4035>.

Darojat, O. (2019), *Lustrum ke-7 Universitas Terbuka Memperkuat konektivitas bangsa di era cyber (The 7th Lustrum of Universitas Terbuka Strengthening the nation's connectivity in cyber era)*, available at: <https://www.youtube.com/watch?v=t88CxQeGGcM> (accessed 20 December 2019).

Darojat, O. et.al. (2018), *14 Tahun Universitas Terbuka Cyber University untuk Negeri (14 Years of Universitas Terbuka Cyber University for the Country)*, Universitas Terbuka, Tangerang Selatan.

DeVries, I. (2019). "Open Universities and Open Educational Practices: a content analysis of Open University websites. *International Review of Research in Open and Distributed Learning*, Vol. 20, No. 4, pp. 167–178, DOI: <https://doi.org/10.19173/irrodl.v20i4.4215>.

Erickson, M. J. and Larwin, K. H. (2016), "The potential impact of online/distance education for students with disabilities in higher education", *International Journal of Evaluation and Research in Education (IJERE)*, Vol. 5, No. 1, pp. 76-81.

Fan, R. and Lee, L. (2006), "Factors and practices improving student completion rate: a comparison of two distance learning courses", *Asian Association of Open Universities Journal*, Vol. 2 No. 1, pp. 76-85, DOI: <https://doi.org/10.1108/AAOUJ-02-01-2006-B008>.

Fozdar, B. I. and Kumar, L. S. 2007, "Mobile learning and student retention", *International Review of Research in Open and Distance Learning*, Vol. 8, No. 2, pp. 1-18, DOI: <https://eric.ed.gov/?id=EJ800952>.

Guri-Rosenblit, S. (2019). "Open Universities: innovative past, challenging present, and prospective future. *International Review of Research in Open and Distributed Learning*, Vol. 20, No. 4, pp. 179–194, DOI: <https://doi.org/10.19173/irrodl.v20i4.4034>.

Hsieh, M. J. (2006), "A challenge for the open and distance education in Taiwan", *Asian Association of Open Universities Journal*, Vol. 2 No. 1, pp. 45-50, DOI: <https://doi.org/10.1108/AAOUJ-02-01-2006-B005>.

Huang, C. (2010), "The development of educational gerontology in Taiwan: an interpretive and critical perspective", *Educational Gerontology*, Vol. 36, pp. 968–987.

Huang, Y., Chang, D. and Liu, C. (2018), "Higher education in Taiwan: an analysis of trends using the theory of punctuated equilibrium", *Journal of Literature and Art Studies*, Vol. 8, No. 1, pp. 169-180.

Jeong, H. (2018), "Rethinking the rationale of open and distance education: a case of the UK Open University", *Asian Association of Open Universities Journal*, Vol. 13 No. 2, pp. 169-178, DOI: <https://doi.org/10.1108/AAOUJ-06-2018-0019>.

Jeong, H. (2019). "Rethinking Open Universities: what makes them unique?", *International Review of Research in Open and Distributed Learning*, Vol. 20, No. 4, pp. 152–166, DOI: <https://doi.org/10.19173/irrodl.v20i4.4163>

Kotsiantis, S. B., Pierrakeas, C. J. and Pintelas, P.E. (2003), "Preventing student dropout in distance learning using machine learning techniques", in Palade, V., Howlett, R. J. and Jain, L. (Eds.) *Knowledge-Based Intelligent Information and Engineering Systems*. KES 2003. Lecture Notes in Computer Science, Vol. 2774, pp. 257-274, Springer, Berlin and Heidelberg.

Lee, S., Hung, J. and Tsai, C. (2014), "Study of senior citizens learning performance in Taiwan", *International Business Research*, Vol. 7, No. 4, pp. 44-54.

Lin, M., Chen, H. and Liu, K. (2017), "A study of the effects of digital learning on learning motivation and learning outcome", *EURASIA Journal of Mathematics Science and Technology Education*, Vol. 13, No. 7, pp. 3553-3564.

McGivney, R. J. (2009), *Adult student persistence in online education: developing a model to understand the factors that affect adult student persistence in a course*, Ed.D. Dissertation submitted to University of Massachusetts – Amherst.

McIntosh, C. and Varoglu, Z. (Eds.). (2005), *Distance Higher Education and Lifelong Learning*, Commonwealth of Learning and UNESCO, Vancouver and Paris.

Milana, M., Rasmussen, P. and Holford, J. (2016), "Societal sustainability: the contribution of adult education to sustainable societies", *International Review of Education*, Vol. 62, pp. 517–522, DOI: <https://doi.org/10.1007/s11159-016-9595-0>.

Muzata, K. K. (2013), "Distance education students' experiences of learning from audio recorded lectures: the case of two colleges of education in Zambia", *Journal of Educational Chronicle*, Vol. 4, No. 2, December 2013, pp. 97-109.

Nash, A. and Kallenbach, S. (2009), *Making it Worth the Stay: Findings from the New England Adult Learner Persistence Project*, New England Literacy Resource Center World Education, Boston.

NOU. (2019), *About NOU Facts and Figures*, available at: http://www106.nou.edu.tw/~eng/facts_figures/A1081.pdf (accessed 14 December 2019).

NOU. (2019a), *Brief History of NOU*, available at: <https://www106.nou.edu.tw/~eng/about2.html> (accessed 12 December 2019).

OECD/Asian Development Bank. (2015), *Education in Indonesia: Rising to the Challenge*, OECD Publishing, Paris, DOI: <http://dx.doi.org/10.1787/9789264230750-en>.

Ossiannilsson, E. (2019), OER and OEP for access, equity, equality, quality, inclusiveness, and empowering lifelong learning, *The International Journal of Open Educational Resources*, available at: <https://www.ijoe.org/oer-and-oep-for-access-equity-equality-quality-inclusiveness-and-empowering-lifelong-learning/> (accessed 19 December 2019).

Pannen, P. (2018), Higher education systems and institutions, Indonesia, in Shin, J.C. and Teixeira, P. (Eds), *Encyclopedia of International Higher Education Systems and Institutions*, DOI: https://doi.org/10.1007/978-94-017-9553-1_581-1.

Perin, V. and Brčić, M. K. (2014), "Lifelong learning and employability – the role of non-formal education", *Andragoška spoznanja*, 2014, Vol. 20, No. 4), pp. 39–48, DOI: <http://dx.doi.org/10.4312/as.20.4.39-48>.

[Sembiring, M.](#) (2017), "Exploratory study of academic excellence associated with persistence in ODL setting", *Asian Association of Open Universities Journal*, Vol. 12 No. 2, pp. 125-136, DOI: <https://doi.org/10.1108/AAOUJ-01-2017-0015>.

Šimenc, M. and Kodelja, Z. (2016), "Lifelong learning — from freedom to necessity", *Creative Education*, Vol. 7, pp. 1714-1721, DOI: [10.4236/ce.2016.712174](https://doi.org/10.4236/ce.2016.712174).

Singh, Y. P. and Agarwal, A. (2013), "Role of open and distance learning systems in education and rehabilitation of children with special needs", *Scholarly Research Journal for Interdisciplinary Studies*. Vol. 1, No. 4, pp. 962-970.

Tait, A. (2008), "What are open universities for?", *Open Learning: The Journal of Open, Distance and e-Learning*, Vol. 23, No. 2, pp. 85-93, DOI: <https://doi.org/10.1080/02680510802051871>.

[Tait, A.](#) (2018), "Open Universities: the next phase", *Asian Association of Open Universities Journal*, Vol. 13 No. 1, pp. 13-23, DOI: <https://doi.org/10.1108/AAOUJ-12-2017-0040>.

UNESCO. (2019), *Futures of Education: learning to become*, available at: <https://unesdoc.unesco.org/ark:/48223/pf0000370801?posInSet=444&queryId=812a8f42-ff53-4977-ab6a-cd13641a499e> (accessed 20 December 2019).

UT. (2017), *Rencana Strategis Bisnis Universitas Terbuka Tahun 2016-2020 (Strategic Business Plan of Universitas Terbuka)*, Universitas Terbuka, Tangerang Selatan, unpublished document.

UT (2019), *Katalog Universitas Terbuka 2019*, Universitas Terbuka, Tangerang Selatan.

UT (2019a), *Laporan Rektor 2018 (Report of Rector 2018)*, Universitas Terbuka, Tangerang Selatan.

Wang, S, Cowie, B. and Jones, A. (2008), "Challenges of e-learning for university instructors in Taiwan", in T. W. Chan, G. Biswas and F. C. Chen et al (eds.), *The 16th International Conference on Computers in Education (ICCE) Asia-Pacific Society for Computers in Education*, Taipei, Taiwan, 27-31 October 2008, pp.229-236.

Wu, M. and Chen, A. H. (2014), "The development of a learning society in Taiwan", *11th International Academic Conference*, Reykjavik, Finland, 24 June 2014.

Zorn, A., Haywood, J., and Glachant, J. (Eds.). (2018), *Higher Education in the Digital Age. Moving Academia Online*. Edward Elgar Publishing, Cheltenham, UK and Northampton, MA, USA.

Zuhairi, A. (2019). "The operational aspects of open and distance learning and its quality assurance system in Universitas Terbuka", *Jurnal Pendidikan Terbuka dan Jarak Jauh*, Vol. 20, No. 2, 74-89, DOI: <https://doi.org/10.33830/ptjj.v20i2.122.2019>.

Zuhairi, A., Karthikeyan, N. and Priyadarshana, S. (2019), "Supporting students to succeed in open and distance learning in the Open University of Sri Lanka and Universitas Terbuka Indonesia", *Asian Association of Open Universities Journal*, Vol. ahead-of-print No. ahead-of-print, DOI: <https://doi.org/10.1108/AAOUJ-09-2019-0038>.

Appendix. List of people consulted at National Open University (NOU) Taiwan

- (1) Prof Sung-Po Chen, President.
- (2) Prof Li Yi Hsu, Vice President.
- (3) Dr. I-Chin Nonie Chiang, Section Chief, Department of Research and Development.
- (4) Dr. Amy Ching-Tsu Hsueh, Director, Teaching Resources and Development Center.
- (5) Dr. Shu-Chuan Li, Chairman, Department of Living Sciences.
- (6) Mr. Ou Xiqiang Tulun, Manager of Chinese Language e-Learning Center, 17 September 2019.
- (7) Mr. Tom Wu, Student, Management Information, 24 September 2019.
- (8) Dr. Yen-Chun Huang, Director, Office of Information Technology, 25 September 2019.
- (9) Mr. Peter Kuo, Chief, Teaching Resources Service Section, 25 September 2019.
- (10) Counsellor, Office of the Counsellor, 27 September 2019.
- (11) Group of 6 Students, 27 September 2019.
- (12) Alumni of NOU, 27 September 2019.
- (13) Dr. Tzu Judy Huang, Director, Center for Lifelong Learning, 27 September 2019.
- (14) Group of Staff, Center for Lifelong Learning, 27 September 2019.