Factors of Technologies-Reliant for 'Pengajian Malaysia' Subject in Online Learning (OLL): A Conceptual Review

Tuan Siti Mastazameatun Long Tuan Kechik[1],*

1   Centre of Academic Services, Kolej Islam Antarabangsa Sultan Ismail Petra (KIAS), 15730, Kota Bharu, Kelantan

ABSTRACT

This study investigates college students' reliance on technologies in 'Pengajian Malaysia' subject (MPU 2113) via the E-learning processes, due to the Covid-19 Recovery Movement Control Order (RMCO) in Malaysia, especially Kota Bharu, Kelantan. The Same Time/ Different Place Instruction Model by R. Johansen et. al. (1991, pg. 16) is adapted into an online cross sectional survey design to determine the factors of technologies-reliant among students who are being separated by distance geographically, but can still meet via a telecommunication medium or teleconferencing with each other at the same time using applications like Google Meet or Zoom, or any noninteractive media such as virtual open broadcasts that instruct numerous numbers of students simultaneously without the programme's originators such as the YouTube channels. Factors that are impacting the contingent of E-learning technologies are used as dependent variables, like human-machine interface, delivery and access, and interaction (adapted from M. S. McIsaac, 1996). The findings of this study will discuss technology advancement that is applied in facilitating the delivery and its significance in the processes of 'Pengajian Malaysia' subject design and instructions for distance education.

Keywords:
Post Covid-19; 'Pengajian Malaysia' subject;
Technologies-reliant; Online Learning

1. Introduction

Distance education or, in this study, E-learning, has shown rapid development, internationally and nationally, since the early 1980s [8]. The E-learning programmes have developed sophistically in audio-, video-, and technology-based learning in which offer a better system that can support the availability and quality of student's distance learning [13]. In regards, global Ministry of Education has provided many incentives and cultivations of (a)synchronous skills for the existence of technology necessities and trainings among the information and communication technologies (ICT) educators [16]. For instance, more than 1.78 million graduates in China received a junior college or university degree through distance learning that recorded 15 per cent more of the total number of graduates among junior college and university in 2017 [5].

Vis-à-vis due to the Covid-19 (Coronavirus) pandemic breakout around the globe in 2020, "school is out but class is on" [18], societies have begun to adapt to new normal of social, cultural, economic and educational implications, whereas the students are 'forced' in virtual connection and participation in the educational processes and environments stimulation [16]. A study that was

---

conducted within Malaysians context indicated that committed e-learning students were more persistence and closer in graduating compared to the inadequate participants who had higher probability to quit their online subjects [12]. Furthermore, other study suggested that the sophisticate and modern quality of the systems and information provided by the institutions and educators could be useful and convenience to the students [15].

By the way, this study purposes to stand-in the gaps of prior research in the framework of colleges around Kota Bharu area in Kelantan. Therefore, this study narrows down its research focus towards college students who are taking 'Pengajian Malaysia' (MPU 2113), one of the 'Matapelajaran Pengajian Umum' that is compulsory to be passed by all students in higher learning institutions in Malaysia. It will help in investigating the variables that contribute to the level of reliance on technologies among the students of the subject, in the E-learning process, that has been massively ordered to be executed virtually in all Malaysia higher educational institutions (HEIs).

2. Research Methodology

This research scope is technologies-reliant among college students who are learning 'Pengajian Malaysia'. Thus, to understand the current situation, a review is made on literatures which are related to the scope. Prior reviews are taken from published books, journals and reports. This conceptual review involves processes such as analysing, assessing, conceptualizing and summarising. A clear conceptual framework is then being presented and proposed to be investigated in future study.

A further study is suggested to determine the reliance on technologies among the students who are learning 'Pengajian Malaysia' (MPU 2113) subject via E-learning in colleges around Kota Bharu through an online cross-sectional survey that is designed for the targeted HEIs that have registered with Malaysia Ministry of Higher Education and Malaysia Qualification Agency (MQA). Data from the primary and secondary sources of the quantitative research will be analysed descriptively for its percentage distribution, mean and frequency counts, while the transcription of the qualitative research will be reported in themes and sub-themes. Multiple regression will explain the relationship between the variables that are involved in the framework.

3. Research Purpose

In parallel to the CMCO by Malaysia Prime Minister on 7th June 2020, the Higher Education Ministry has announced that all teaching and learning (TnL) programmes in higher educational institutions (HEIs) should be conducted through online platforms until 31 December 2020. With this order, large-scale online education activities are performed, including 'Pengajian Malaysia' (MPU 2113) subject among college students in Kota Bharu. The concept of this study is envisioned to identify the salient factors that are impacting the contingent of E-learning technologies in which will be useful to facilitate the delivery and processes of 'Pengajian Malaysia' subject design and instructions for distance education in the future.

4. Research Gaps in Prior Studies

Several studies have suggested that students in the digital era will be relying on the technologies in PdP processes. However, there are some factors that contribute to the level of reliance as the HEIs students have different tastes and perceptions towards the technologies. As a result, Taat and Francis

[15] in their study on students' acceptance of E-learning, concluded that the appropriate time saving and subject contents were influenced by the key factors such as useableness, lecturers' features, system quality, the provided information, and accessible technical support, as well as, the reimbursements and practicality of the programme. In contrast, another study by Rahim [12] showed insignificant relationship between students' engagement and online students' satisfaction.

Many scholars also agreed that the chosen TnL methods are significantly related to the contingent factors of E-learning technologies. However, most also argued that information sharing processes that were offered by the emerging technologies had high cost-effective solutions to the problems. The handbook by MacIsaac and Gunawardena [8] noted that the concept of distance learning technologies emphasized learner independence, in which the feedback from the students were usually completed and submitted via self-assessment practices virtually. Recent technologies of interactive real-time and two-way applications (synchronous), such as video-, audio- and virtual-conferencing, had linked separated students and educators in real time interaction [8].

Nevertheless, scholars failed answering related questions on reliance of technologies that beneficial for E-learning among students. Most of the studies were focused on perceptions, behaviours and acceptance of E-learning. Thus, this study will focus on the factors of technologies-reliant in E-learning among students who are learning 'Pengajian Malaysia' (MPU 2113) subject in colleges around Kota Bharu.

5. New Normal in Education

The new normal, is adapted by societies after the outbreak of Covid-19 pandemic, globally. People who were locked in homes were 'forced' living in the new learning conditions [16]. Malaysia was also impacted as its infection spread rapidly and widely around the nation [18]. In controlling the pandemic, standard operational procedures (SOP) were announced to Malaysians by the Ministry of Health, according to the one proposed by the World Health Organization (WHO). The SOPs included limitation of crowd gathering, that led to the execution of non-face-to-face TnL in all HEIs in Malaysia. Hence, the institutions were instructed to use internet platforms to teach students. As Professor Dr. Abdul Karim Alias, Director of Centre for Development of Academic Excellence (CDAE) at Universiti Sains Malaysia (USM) emphasised, "Online learning and online education are no longer an option – it's a must" [10].

In addition, 21st century learning skills like digital literacy, problem solving and critical thinking were claimed to be able helping students in thriving the IR4.0 era with its features of mixed reality (MR), augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) in multimedia mobile devices [11]. E-learning approaches were adopted in Malaysia's higher learning institutes in various participations of lectures, tutorials, tests, assignments, marks reviews and feedbacks (MIDA Insights - Services, 2020).

5.1 E-Learning in Malaysia

In the mid-70s, telephone was used for the involvement in tele-conferences discussion that linked educators and students who gathered at different places around the nation. It was known as the 'phase 1' when the off-campus degree programme in Malaysia was initiated in Universiti Sains Malaysia (USM), using sophisticated teaching activities and tailed by Universiti Teknologi MARA (UiTM) or formerly known as Institut Teknologi MARA who offered open and distance learning programme in thirteen its branch campuses. In displaying diagrams, explaining teaching concepts, or

demonstrating and understanding related processes to the learners, devices like projectors, video or audio players and electronic books were used.

As years shifted, the 'phase 2' came in the early 1990s, whereas the internet in cable networking forms (LAN, WAN) was introduced and it moved rapidly. HEIs like Universiti Tun Abdul Razak (UNITAR); with hi-tech facilities used modern technologies in their TnL; and Multimedia University (MMU); who minimized numbers of face-to-face classess, were two institutions that developed simultaneously with the internet technology.

With the tremendous speed of applied technologies in TnL, students and educators began to communicate via e-mails, chats, forums, and weblogs in early 2000. Open University Malaysia (OUM), UNITAR and MMU were leading the E-learning approaches with others applied the mixed facilities whereas the face-to-face lectures were still dominant. Later, distance learning programmes upgraded to electronic- and digital-based, before the network-based learning was being adopted. Recently, virtual learning could be performed anywhere and anytime by anybody.

5.2 'Matapelajaran Pengajian Umum' (MPU) – 'Pengajian Malaysia' (MPU2113)

The Ministry of Higher Education (MOHE) had introduced the components of 'Matapelajaran Pengajian Umum' (MPU) or General Education Subjects (formerly known as 'Matapelajaran Wajib' (MPW)) that should be taught as compulsory subjects in every private higher education institution (PHEIs). That was stated in the Private Higher Education Institution Act 1996 (Act 555) and the Malaysian Qualifications Agency (MQA) requires both Malaysians and non-Malaysians who were studying in any PHEIs to complete MPU as pre-requirement for the award of certificate, diploma or undergraduate degrees. In 2013, MOHE had officially announced the new modular system of MPU in four categories which were (U1) 'Appreciating philosophy, values and history', (U2) 'Mastering humanity skills', (U3) 'Broadening knowledge about Malaysia', and (U4) 'Developing practical community-minded skills'. 'Pengajian Malaysia' was a subject under the U1 category. The MPU subjects were beneficial to students as they were well-adjusted and conducive combination of subjects with joint learning, leadership and project administration skills via empirical learning. The subjects aimed to augment skills, acquisitions, and applications, as well as promoting a more consolidate and comprehensive knowledge about Malaysia.

'Pengajian Malaysia' with the subject code MPU2113, discussed the 'History and Politics', 'National Constitution', 'National Ruling Systems and Structures', 'Society and Unity', 'Country Development' and 'Religion and Belief' in Malaysia. It aimed to generate graduates who possessed national identity and strong patriotism spiritual. The TnLs were made in forms of lectures, assignments, examinations and experiential learning. The course leaning outcomes were (i) to explain and debate on the variety of the society, (ii) to make reviews on the significance of national identity towards strengthening patriotism spiritual, and (iii) to build and cherish social relationship and interaction among students.

5.3 Human-Machine Interface in E-learning

According to the handbook by MacIsaac & Gunawardena (1996), for a technology, human-machine interface was taken into contemplation on how the apparatus connected with the end users. Ergonomics or the design of human-machine interfaces had created significant and wide area of researches that related to human factors. Educators and learners who interacted with the content, educator, and learners in the technology interfaces were claimed as competent users of the medium

through various trainings or orientations in which they interacted with the content, educator, and other learners, such as in graphics communication that used graphic tablets in the audio-graphic systems [8].

A study agreed to this whereas the three main critical success factors in E-learning were identified to be (i) instructor that included classroom interaction, attitudes, and technical competence, (ii) prior applied technology, and (iii) technology itself [17]. User interface, availability of the internet, instructions of multimedia services, video conferencing, and systems for the course management were named as the IT tools that were reliable, simple and easily accessed by students [7]. While in another study, technical support was encouraged to be considered important due to external issues; such as less user-friendly interface that could cause students unable applying the modality [15]. Therefore, this variable is measured as one of main factors that contribute to the reliance on technologies among students who are using the internet in their online learning sessions.

5.4 Delivery and Access in E-learning

As stated previously, the time and place were the independent variables in this study. It was closely related to the element of delivery and access in how and where the technology disseminated among related students in distance learning [8]. The approaches and ways of how students applied technologies in partaking the learning processes were significantly being considered.

A prior study stated that students with no access to digital gadgets or internet connection at home could create the digital inequalities issues [16]. Some scholars also agreed that access was one of the five pillars of online education quality other than effectiveness in learning, satisfaction towards the faculty systems and services, students' satisfaction, and institutional cost-effectiveness [12]. Therefore, many had suggested that excellent internet coverage could allow educators to deliver materials and resources that more rapid and easier within the learning institutions virtually [15].

5.5 Interaction in E-learning

The two-way communication would allow the interaction to take place between educator and learners. In previous years, one-way communication platforms included the printed texts and materials, radio and cablecast television programmes or open broadcast, as well as, audio or video cassettes. Recently, technologies assisted the users to interact synchronously in the real-time communication or asynchronous in time-delayed communication. When two or more computers were linked, synchronous interaction could be performed among participants and talked to each other simultaneously. For instance, audio teleconferencing, audio graphics teleconferencing, video teleconferencing, interactive television or real-time computer chatting. And when used in a time-delayed way, or asynchronous, interactions like computer-mediated communications can be executed through email, bulleting boards, or computer conferencing.

In a study that organized online class as a unit and two-way interaction, it suggested that some problems could raise the implementation process of TnL, whereas lacking teacher-student interaction was one of them [18]. This issue was crucial as interactions enabled students to involve in the TnL process with their educators when problems were encountered and also encouraged students to accept and continue applying the E-learning system [15]. Some scholars agreed to the same thing [7,12,16]. This was because naturally, learners who were born in the era of recent digital technology would socialize daily using digital media to interact and utilize them.

6. Research Conceptual Framework

The proposed research frameworks were taken and adapted from the handbook by MacIsaac and Gunawardena [8] because these were considered as the earliest frameworks that were suggested by prior scholars. Figure 1 shows the '4-square map of distance education technology options' that were adapted from Johansen *et al*.'s [4] and taken from the handbook by MacIsaac and Gunawardena's [8]. Figure 2 was illustrating the factors that impacted the selection and used of distance education technologies that were also adapted from the same handbook.

Referring to the descriptions given in the handbook, Johansen et al.'s [4] was selected to define the technologies applied in distance education or E-learning. The selection seemed to be the most suitable to this study's purpose because E-learning was affecting the correspondence education through the forms instructions that encouraged teaching a group of learners and collaborative learning among peers.

The model (Figure 1) designated two independent variables, namely time and place, that supported E-learning TnL. Respondents were selected among those who learned in the same place at the same time as in face-to-face class, as in the asynchronous virtual conferencing who sometimes must study apart in different places and at different times. They also needed to handle two other disparities of being in different places at the same time, such as using mobile phones for a video teleconference, as in colleges, classrooms, or laboratories, that occurred at the same place but at different times. Therefore, four types of technologies that supported the group processes were (i) same time/ different place with face-to-face approach, (ii) different place/ same time using interactive applications, (iii) same time/ different place of teleconferencing, and (iv) different place/ same time in labs or study centres. However, in this study, only type (ii) and (iii) were selected as the instructions to achieve the research objectives.
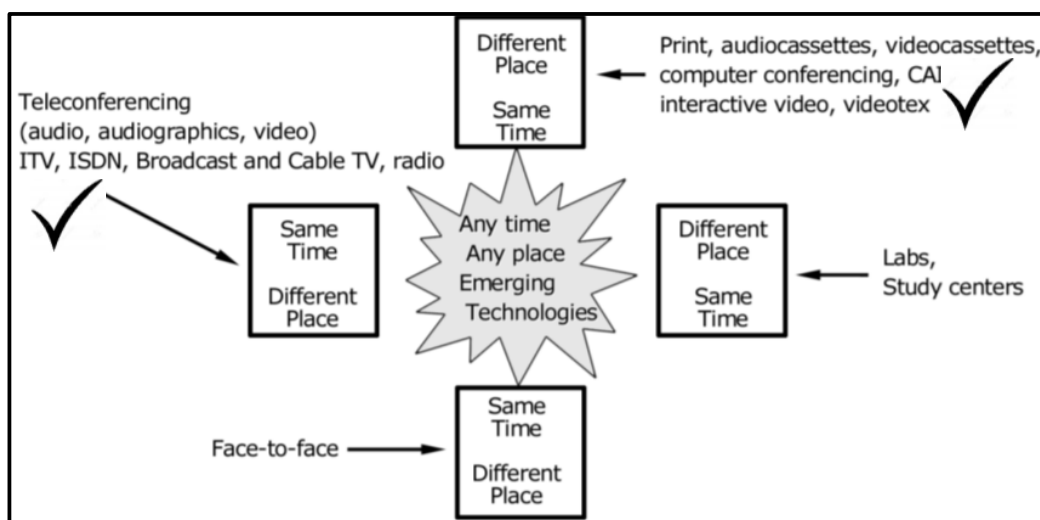

Fig. 1. The 4-square map of distance education technology options
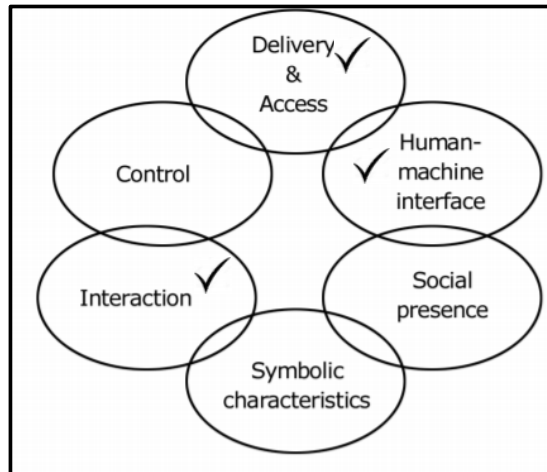(Adapted from Johansen et. al., [4] in MacIsaac and Gunawardena [8]'s handbook)

Fig. 2. Factors impacting selection and use of distance education technologies
(Adapted from MacIsaac and Gunawardena [8]'s handbook)

On the other hand, the dependent variables that were taken out from the framework that were recommended by McIsaac and Gunawardena [8] in figure 2, were only three out of six characteristics that could be significant in the E-learning technologies adoption and use. The first attribute is human-machine interface that is known to provide symbiotic and virtual environments via sophisticated graphic interface such as the 'Google Meet'. The second attribute is delivery and access that support the delivery systems of a distance learning through virtual platforms, for instance the 'Google Classroom'. The third attribute is interaction that refers to the attempt of using any computer or smartphone mediated communications that is considered as the main factor of the effectiveness of the online learning. While others that are not being studied are (4) control, (5) social presence, and (6) symbolic characteristics.

The selections are made to suit the TnL of 'Pengajian Malaysia' (MPU 2113) subject. The subject itself contains syllabus that are hard to be delivered to students, such as history, legislation and administration of Malaysia, in which usually considers to be quite difficult to capture a student's attention on the contents. Therefore, these three variables are chosen to be adapted into the TnL in order to investigate students' reliant on technologies while involving in the TnL along the 14 weeks of studying it.
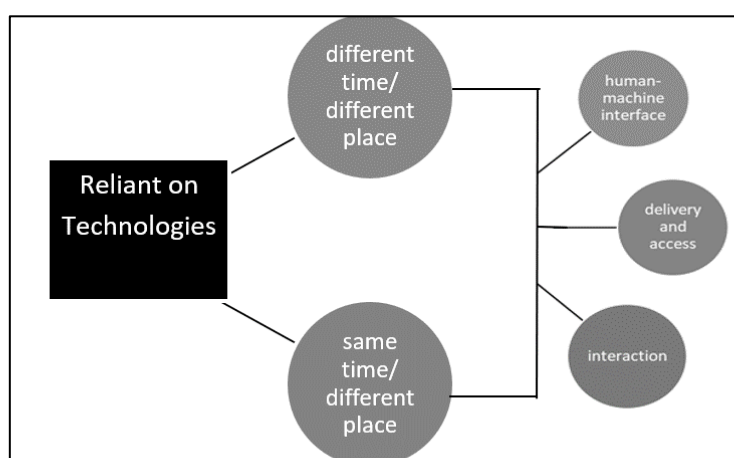

Fig. 3. The research conceptual framework

By merging all variables in both figures (Figure 1 and Figure 2), the proposed research framework is shown in Figure 3. In order to achieve this study's general objective of reliant on technologies in E-learning among the students who are learning 'Pengajian Malaysia' (MPU 2113) subject in colleges around Kota Bharu, the research framework is working on the relationships among the variables. It emphasizes the influence of dependent variables; human-machine interface, delivery and access, and interaction; on the E-learning TnL that involve with time and place (independent variables). These relationships will indicate the level of reliant on technologies among the students in learning the subject. As a result, the theories suggested by MacIsaac and Gunawardena [8] in their handbook can be approved or neglected with the recent study as this one. At the same time, all research questions can be answered with concrete supported data analysis from the study.

7. Conclusion

This conceptual paper is indicating the post-Covid-19 teaching and learning (TnL) processes that are now being performed online in a massive way. Every educator is forced to learn and master the interface skills of ICT technologies in order to guide their students in the online TnL sessions. The failure to master the skills will lead to the failure to hold the online classes effectively. On the other hand, students are also being forced to learn via internet. They need to master the same skills as their educators, in parallel to synchronise with the teaching methods that are being used. With variables like the human-machine interface, delivery and access, and interaction that are predicted to impact the educators and students, it is hoped that the level or reliant on technologies in online TnL sessions can be analysed and discussed.

In the future, a learning model of 'Pengajian Malaysia' subject that is going to be designed will consider all the attributes that are recommended in this research when E-learning has significantly play specific role that is exploited by any HEIs. We do not want to be 'unprepared' if an outbreak like the Covid-19 pandemic happened again in the future [8]. As far as it concerns, the digital education is the new normal of education.

References

[1] Gunawardena, Charlotte N. "Integrating telecommunication systems to reach distance learners." *American Journal of Distance Education* 4, no. 3 (1990): 38-46.

[2] Gunawardena, Charlotte N. "Changing faculty roles for audiographics and online teaching." *American Journal of Distance Education* 6, no. 3 (1992): 58-71.

[3] Gunawardena, C. N., and P. E. Boverie. "Interaction of learning style and media, method of instruction, and group functioning in distance learning." In *Proceedings of the eighth annual conference on distance teaching and learning*, pp. 65-69. 1992.

[4] Johansen, Robert, David Sibbet, Suzyan Benson, Alixia Martin, Robert Mittman, and Paul Saffo. *Leading business teams: How teams can use technology and group process tools to enhance performance*. Addison-Wesley Longman Publishing Co., Inc., 1991.

[5] Li, Fengliang, and Liang Wang. "An empirical study on distance education and job match." *Sustainability* 12, no. 2 (2020): 619.

[6] Magut, Hellen Jepkemoi, and Sally Kiplagat. "Covid-19 Pandemic and The Role of Kenyan University Libraries in Online Education."

[7] Masrom, Maslin, Othman Zainon, and Rosdina Rahiman. "Exploring the key factors in institutional e-Learning implementation." *e-learning Issues in Malaysia Higher Education, Mohd Fuad Mohd Salleh* (2008): 72-85.

[8] Jonassen, David, Michael J. Spector, Marcy Driscoll, M. David Merrill, Jeroen van Merrienboer, and Marcy P. Driscoll. *Handbook of research on educational communications and technology: a project of the association for educational communications and technology*. Routledge, 2008.

[9]   MIDA Insights - Services, (2020), "*COVID-19: Opoortunities for e-Learning Industry",* https://www.mida.gov.my/home/covid-19:-opportunities-for-e-learning-industry/posts/

[10]   MIDA, (2021), "*Evolution of e-Learning in the Malaysian Higher Education Institutions",* BERNAMA.

[11]   Ministry of Education Malaysia, (2013), "*Malaysia Education Blueprint 2013-2025 (Preschool to Post-Secondary Education)",* Putrajaya: Kementerian Pendidikan Malaysia.

[12]   Rahim, NORIZAN BABA. "Improving student engagement and behavioural outcomes via persistence among distance learners." *Akademika* 90, no. 2 (2020): 91-102.

[13]   Sewart, David, Desmond Keegan, and Borje Holmberg, eds. *Distance education: International perspectives.* Routledge, 2020.

[14]   Sun, Anna, and Xiufang Chen. "Online education and its effective practice: A research review." *Journal of Information Technology Education* 15 (2016).

[15]   Taat, Muhamad Suhaimi, and Agatha Francis. "Factors Influencing the Students' Acceptance of E-Learning at Teacher Education Institute: An Exploratory Study in Malaysia." *International Journal of Higher Education* 9, no. 1 (2020): 133-141.

[16]   Tzifopoulos, Menelaos. "In the shadow of Coronavirus: Distance education and digital literacy skills in Greece." *International Journal of Social Science and Technology* 5, no. 2 (2020): 1-14.

[17]   Zainon, O., Masron, M. and Rahiman, R. (2008), "E-learning critical success factors: the students' perspective", In: M. F. M. Salleh, ed. *E-learning Issues in Malaysian Higher Education,* Skudai, Johor: Universiti Teknologi Malaysia (UTM), pp. 124-139.

[18]   Zhou, Longjun, Shanshan Wu, Ming Zhou, and Fangmei Li. "'School's out, but class' on', the largest online education in the world today: Taking China's practical exploration during The COVID-19 epidemic prevention and control as an example." *Best evid chin edu* 4, no. 2 (2020): 501-519.