

EXPLORING ANDRAGOGICAL ASSUMPTIONS FOR UNIVERSITY STUDENT'S READINESS IN MOBILE-FLIPPED OPEN DISTANCE LEARNING

Siti Hajar Halili

Department of Curriculum & Instructional Technology,
Universiti Malaya, Kuala Lumpur, Malaysia. Email: siti_hajar@um.edu.my

DOI: [10.5281/zenodo.11069970](https://doi.org/10.5281/zenodo.11069970)

Abstract

This study aims to investigate adult students' learning in a mobile-flipped open-distance learning (MF-ODL) setting. Andragogy theory by Knowles (1980) is used based on this study. 120 respondents answered the questionnaire. The collected data were analyzed using descriptive analysis. This study showed that the majority of the students agreed that a mobile-flipped open-distance learning setting was more appropriate for fulfilling their needs as adult learners. The findings portrayed readiness to learn as the adult learning principle that influenced learners the most to follow the teaching and learning process using a mobile-flipped approach. Subsequently followed by the motivation to learn, learners' experience of learning, orientation to learning, learners' self-concept and need to know the reason for learning. Hence, the findings have implications for educators, especially for those involved in the adult education field as they need to consider student preferences when using the MF-ODL setting.

Keywords: Mobile Flipped Classroom, Open Distance Learning, Adult Student, Andragogical Assumptions.

INTRODUCTION

In general, the formal education system is divided into the conventional and open distance learning system. The conventional system is where the interaction between the lecturers and the students is in a classroom-based setting. An open distance learning system is where students and lecturers separately interact by using media resources as the intermediaries such as the use of printed materials, telephone, teleconferencing, and so on (Md, 2001). The open distance learning setting has to incorporate the value of lecturers' and students' experiences and expectations. The lecturers do not merely plan the content and transmit the knowledge but they need to function as instructional designers that can immersive guide and facilitate the learners (Darden, 2014). The technology-based curriculum design in digital instructional strategies could help to cover all associated lessons with a systematic lesson plan to deliver education in a new way of thinking about the future of education (Rafiza et.al., 2015). The role of lecturers is revamped from lecturers as knowledge disseminators the lecturers as facilitators Jim (2008). Lecturers who are involved in an open distance learning program do not need to master all learning tools because the main focus is on learning and not the tools. They just need to choose the most suitable and comfortable digital instruction strategies which would work best for their course.

Knowles (1980) defines the term adult from various aspects, namely from biological, legal, social and psychological aspects. From a biological aspect, an individual is defined as an adult when he or she has reached a certain age and is capable of bearing children. The legal aspect describes adults as those who are qualified to choose and obtain a driver's license. From a social point of view, the term adult is seen when an individual plays a role as a mature person, with a career and family. In psychology, the individual is considered an adult when they have reached a level of

ability to manage their own lives. Among the things that need to be understood in adult learning are aspects of students' own needs, characteristics or traits of students as well as students' backgrounds.

Lifelong learning for adult learners is seen as a necessity in the 21st century (Glastra et al., 2004). Slentz (2009) noted that adult students have returned to learning institutions to improve their livelihoods and gain better employment opportunities. Adult students have their careers, and family responsibilities and gain years of experience (Huang, 2002). They face certain constraints such as family responsibilities, economic problems and the workplace while furthering their education. Adult learners refer to graduate and postgraduate students in higher education (Knowles et al., (2005). They learn independently because of their maturity, knowledge, and experience in conducting learning activities. The integration of technology in the teaching and learning process refers to the use of various software and hardware such as computers, Liquid Crystal Displays, printers, radios, and televisions as well as various software such as MS Word, MS Powerpoint, electronic spreadsheets, Internet facilities on a large scale such as lecture methods or in scale small such as student-centred learning activities to stimulate such activities so that classroom management becomes more effective (Hermans et al., 2008; Shelly et al, 2004, William, 2000).

LITERATURE REVIEW

With the use of technologies, various teaching and learning methods can be used to deliver lesson content in the 21st century (Brock, 2020). Among them are virtual learning, distance learning, collaborative learning, interactive learning, problem-based learning, project-based learning and so on (Siti et.al., 2018). Open distance education programs provide an opportunity for those who are already working to continue their studies without having to leave their career (Dhito, Marsekal & Reny, 2020). The concepts of open distance learning and conventional learning are different from the aspect of using media as an intermediary, interaction and so on. This program provides an option other than the conventional education system that allows everyone to get the same education. The concept of open distance education is different from the concept of conventional education in that students are physically separated from the lecturer. This program is a delivery system that connects students with learning resources, and an organized learning program, separation from the physical aspects between lecturers and students as well as the use of media technology in the teaching and learning process which is usually in the form of two-way communication.

Mobile learning is a medium that can enhance formal or informal learning through mobile technology, especially mobile devices. Wong (2012) states that mobile learning allows students to access a personalized learning environment while they are physically moving. Due to technological advances, everyone has access to mobile devices, especially on the use of smartphones and tablets. In the education system, the use of smartphones and tablets is becoming increasingly popular among students. One of the advantages of mobile learning is the ability to learn anytime and anywhere. Halili et.al., (2022) and Wang and Heffernan (2010) believe that learning in a traditional setting is irrelevant in today's digital age. The concept of a reverse classroom is the opposite of a traditional classroom, meaning that students listen to lectures outside the classroom through the use of online video lectures or other learning materials from

free websites and create interactive group discussions in the classroom (Sams & Bergmann, 2014).

Mobile learning can be considered a step forward in the field of mobile learning, especially in conveying information and learning content anytime and anywhere. Students do not need to be together at the same time and they can follow the session via a mobile device in a convenient place such as at home or office. Students will need to use their mobile devices and Internet connection to attend the session. Regarding the mobile learning approach, students have access to review and read the course material several times according to their schedule before the class session. They can replay all or part of a file, pause it, and resume it whenever they want. Especially, this can benefit those who are reluctant to interact and participate in class. This is because adult learners are an active group of students who need the knowledge to solve the problems they face and need a teaching and learning process that can meet their interests and needs (Mazanah & Carter, 2002). Adult students have extensive experience in the field in which they practice.

Alden (2013) and Kalloo and Mohan (2012) mention that mobile learning has a major influence on the education system and has proven successful in a variety of contexts and target groups. The literature indicates that there are many advantages to using mobile learning in educational institutions (Norman et al., 2015; Maryam & Siti, 2015; Nick, 2012; Shih et al., 2010; Nadire & Huseyin, 2009; El-Hussein & Cronje, 2010; Kristen, 2007; Luvai, 2007 & Schwabe & Goth, 2005). The recent literature indicates that various studies have been conducted in the field of the flipped classroom (Abeysekera & Dawson, 2015; Chen & Summers, 2015; Nederveld & Berge, 2015; Baepler et al., 2014; Chen et al., 2014 and Davies, et al., 2013). However, there is still a lack of studies exploring mobile devices using the flipped classroom approach (Hung, 2015). In the Malaysian context, Rahman et al., (2014) also agreed that research, especially those related to the flipped classroom approach is limited. Fewer studies have been done on the use of flipped classrooms in teaching and learning processes (Jamaludin & Osman, 2014; Osman et.al., 2014; Johary, 2015). The idea of using a mobile open distance learning approach is not often studied and there are gaps in the literature exploring mobile flipped open distance learning.

Adult learners are motivated to learn when they can relate the learning content to their real-life experiences. It is hoped that the learning process of adults is different from that of young students, especially with the use of technology in the teaching and learning process. The purpose of this research was to explore adult student learning with the use of mobile flipped open-distance learning based on the andragogy assumption by Knowles. The use of smartphones and tablets is becoming a part of student life. We believe that the propensity of adult students to use moving classes is related to their choices based on the andragogy assumption by Knowles.

Adult learners bring years of experience and knowledge to any learning situation (Hillesheim, 1998). The flipped classroom approach can help adult students to be more responsible for their learning where students learn video content outside of class time and create learning activities in the classroom (Butt, 2014). The role of information technology in adult education must be described as a catalyst that activates and drives the learning process to be more effective (Yusup, 2001). Accordingly, this study aimed to determine the principles of adult learning that are most appropriate for adult students undergoing postgraduate programs using mobile

classes. Therefore, it aims to answer the following research questions: Do the principles of adult learning meet the needs of adult learners in using mobile flipped open-distance learning settings?

METHOD

This section briefly describes the procedure of how lecturers apply mobile flipped open distance learning moving in an effective teaching model course at a university in Malaysia. This course is an elective course for undergraduate students in the academic year. Serin (2012) defines mobile learning based on its characteristics as learning is considered as any, students move and students strive to acquire knowledge. Norman et al., (2015) define mobile learning into two perspectives the point of view of students and the perspective of learning tools. Further, researchers focus on mobile devices or gadgets as a platform to connect lecturers and students in the teaching and learning process.

The adult learning approach better known as the andragogy theory introduced by Knowles (1980) was used in this research to determine the principles of adult learning that are best suited to adult learners by using a moving-back approach. Andragogy theory holds a set of assumptions about how adults learn and emphasizes the value of the learning process. Knowles outlines several learning principles known as andragogy models that can serve as a guide in evaluating effectiveness in the field of adult learning. Knowles identified six principles of andragogical assumptions; (1) learner's self-concept, (2) motivation to learn, (3) readiness to learn, (4) role of learners' experience, (5) learners need to know and (6) learning orientation. Students' self-concept shows that adult learners are more responsible and independent in the teaching and learning process. Motivation to learn refers to the learning process with the use of technology that increases their motivation to learn and confidence to use this technology in the future.

Next, readiness to learn determines that adult learners are prepared to learn better and can achieve good performance by using technology in their teaching and learning process. The role of students' experience in dealing with the use of this technology helps them practice and develop new skills as well as plays an important role in their learning process (Merriam, 2001), Students need to know that as adult learners, they can improve their performance in lessons. Finally, learning orientation refers to the situation when adult learners show better performance in their learning process and the information received is easier to remember when using this technology in the teaching and learning process. The students in this case study were part-time adult students pursuing undergraduate studies. This model is suitably used in this research to assist and thus drive more effective teaching and learning processes among adult learners using the mobile flipped approach.

Mobile devices in this study, including the use of smartphones or tablets whereas mobile social media used in this study, are telegrams as a platform to support the teaching and learning process. Telegram is a mobile instant messaging software launched by Pavel Durov and Nikolai and the team is based in Dubai (Telegram, 2021). Users can quickly send text, photos, videos, voice and share directly with friends or Telegram groups. They can install the software on their mobile device and log in to Telegram via the mobile device, search for a number or scan a QR code.

The mobile-flipped approach was implemented in the second semester of the four-week academic year. According to Ozan and Adile (2015), the use of video is not the only condition for implementing an open-distance learning approach. Therefore, in this study, students were given short message service (SMS), video, notes or other links to websites (journal articles, blogs, videos, etc.) before class and during class, lecturers magnified learning activities such as discussions, quizzes, performances and others. Online video lectures are adopted from YouTube. The selected videos provide information on the learning lessons of the course. Video lengths vary, from 1.00 minutes long and 8:38 minutes long. Using short videos lasting 10–15 minutes is the best method of inserting such videos (Schmidt & Ralph, 2014). To implement the mobile-flipped approach, lecturers embarked on a five-step procedure to enhance students' teaching and learning processes such as; 1) provide online video lectures, notes or other website links; 2) share video lectures, notes or other website links via the Telegram app; 3) watching video lectures online, reading notes or other website links outside of class; 4) in the classroom, the lecturer acts as a facilitator and quiz; and 5) conduct group discussions and presentations in class. Overmyer (2012) believes that in an inverted classroom, students are more confident and active in classroom activities because they have provided learning materials outside the classroom.

Questionnaires were used in this study because they are a simple tool for collecting and recording information on specific issues (Cohen et al, 2000). The validity and reliability of the questionnaire have been confirmed by previous research (Halili et.al., 2017). The Cronbach's alpha result was 0.852. Thus, these results indicate that all items of the questionnaire are considered reliable and potentially used in other studies. The survey questionnaire consisted of four Likert scale items that supplied quantitative data for the study (1: Strongly Disagree, 2: Disagree, 3: Agree, 4: Strongly Agree). Trochim (2002) stated that a four-point Likert scale is suitable for obtaining the level of use of each element as well as neutral or uncertain responses by respondents. Secondary data were obtained by reviewing reference books, journals, theses, and internet online resources.

Respondents in this study were off-campus undergraduate students enrolled in distance learning programs. Researchers use sampling aimed at ensuring that subjects are truly representative of the population. 120 students were purposively selected as subjects and they answered a questionnaire distributed in class. All participants submitted a questionnaire at the end of the final session. Descriptive analysis (percentage, means, and standard deviation) was used to determine the differences between the six principles of andragogical assumptions with the use of a mobile flipped approach. This analysis is suitably used to analyze significantly different mean score values. Data were then analyzed using statistical analysis with SPSS version 25.0 software.

RESULTS AND DISCUSSION

Descriptive analysis (percentage, means, and standard deviation) was used to determine the differences between the six principles of andragogy assumptions by Knowles (1980) with the use of a moving-back approach in the teaching and learning process. This analysis is suitably used to analyze significantly different mean score values. In this analysis, the significance level used was 0.05 at the 95% confidence level. Based on Table 1, percentages, means, and standard deviations were analyzed

to determine student agreement on the questions posed based on andragogical assumptions by Knowles (1980). The results showed that the mean value for each item exceeded 2.50. This suggests that respondents have a positive view of applying the andragogical assumptions by Knowles (1980) with the use of a mobile approach in the teaching and learning process. These findings indicate that overall, adult students agree that the use of mobile classes is more appropriate in meeting their needs as adult students of undergraduate programs.

Table 1: Percentage, mean and standard deviations in descending order for overall items

Andragogical Assumptions	Mean (SD)	Percentage (%)
Readiness to learn	2.84 (0.56)	86
Motivation to learn	2.78 (0.52)	83
Role of learners' experience	2.70 (0.50)	80
Learning orientation	2.67 (0.47)	76
Learner self-concept	2.65 (0.45)	73
Learners need to know	2.60 (0.41)	70

*significant at the 0.05 level, SD – Standard Deviations

When comparing percentages, means and standard deviations between andragogical assumptions by Knowles (1980), the majority of adult learners agreed that student readiness was the most pleasing factor in mobile movement with a mean and standard deviation percentage of 86%, 2.84 (0.59). The findings of this study indicate that students are prepared to learn better and can achieve good performance by implementing a moving classroom in their teaching and learning process. The researchers agreed that the module material given to the students before the launch of the session prepared them for the topics to be taught during the class session. On the flipped classroom approach, students were given learning materials by the instructor before coming to class. They take responsibility and have learning skills that are directed to their learning activities (Abeysekera & Dawson, 2015). Therefore, students are prepared to learn better when using mobile-flipped in their teaching and learning process.

The second principle of adult learning; motivation to learn with a percentage, mean and standard deviation recorded of 83%, 2.78 (0.52). For more effective learning, motivation is important to motivate students to take action. This is due to the situation when students are motivated to learn something, the learning process becomes more effective because students pay more attention and follow the instructions given in the video session.

Brophy (2010) also argues that motivation is important to motivate students to achieve greater success in the teaching and learning process. This means that students have a higher motivation to learn using flip-cell phones in their teaching and learning process. The third principle of adult learning is the learning experience; this recorded a percentage, mean and standard deviation of 80%, 2.10 (0.5), respectively. Adult learning is effective if the topic of learning has a direct use for their work or personal life, and is problem-focused, not content-oriented; the basis of adult learning activities is experienced including mistakes committed. Therefore, researchers feel that the teaching and learning process will be more effective if students can use the experience in their lessons.

Further, the learning orientation, which recorded a percentage, mean and standard deviation of 76%, 2.67 (0.47) indicated that students were able to change their performance with the use of mobile flipped. This technology can help them improve their performance throughout the teaching and learning process. The findings of this study show that with the use of mobile-flipped, students can recall the concepts learned in the teaching and learning process. This technology is very helpful because the student can easily remember information.

Significantly, the classroom approach is reversed, students learn at their own pace; they can watch video lessons according to the time they prefer (Fulton, 2012). Percentage values, means and standard deviations of 73%, 2.65 (0.45) for the principle of adult learning, i.e. students' self-concept also play an important role in adult learning. They are independent and build their knowledge with limited guidance from lecturers. Hong et al., (2011) agreed that adult students are responsible for their lessons if they get little guidance or instruction from the lecturer.

Thus, these findings confirm that the use of mobile flipped has helped them improve their performance throughout the teaching and learning process. The principle of adult learning that records the lowest percentage is the need for students to know why they are learning. The mean and standard deviation compared to other adult learning principles were recorded at an average of 70%, 2.60 (0.41). This means that students are less able to change their performance with the use of mobile phones.

Overall, the results of the study showed that the respondents were positive towards the use of mobile flipped in line with their learning principles as adult learners. Figure 1 shows the percentage of respondents' agreement with the andragogy assumption. In comparing the methods recorded according to the principle of adult learning by Knowles (1980), this study also found that students' self-concept is the principle of adult learning stated as the most important aspect in motivating students to follow the teaching and learning process in using a mobile phone. This is followed by motivation to learn, willingness to learn, learning experience, need to know why they need to learn and finally, learning orientation.

The results of this study show that with the use of mobile-flipped, students are more responsible for their teaching and learning process and more independent in obtaining the information they need in learning. Therefore, in the teaching and learning process, students' comfort in learning difficult topics repeatedly until understanding is achieved is one of the important factors of mobile-flipped. Jamaludin (1998) stated that this form of technology also allows them to control their learning process because they can pause, stop and review the learning material.

As for the implications of this study, parties involved in designing online learning applications require them to consider the needs of students, especially the needs of adult students before planning any teaching and learning activities. In relation, Lyle and Elizabeth (2002) have listed several aspects that can negatively impact adult learning, namely lack of study skills, limited knowledge of learning approaches and strategies, students failing to select and practice appropriate learning approaches for themselves that able to improve their learning, students do not show improvement in learning when compared to other students and the courses followed hinder the smooth running of the learning process as a whole.

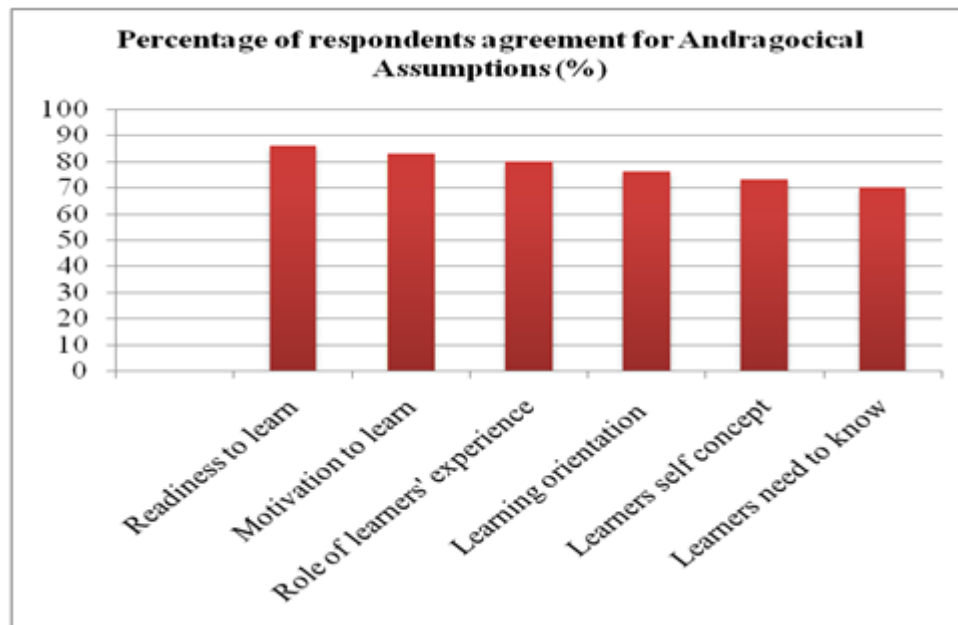


Figure 1: Percentage of respondents' agreement with the andragogical assumption

The findings of this study are also consistent with the theory of andragogy by Knowles (1995). Overall, this study has major implications for adult student learning. Highlight their role to take more responsibility for their learning before class and during class; they will apply their knowledge, experience, and skills with lecturers and peers. Adult students who are busy with their daily schedules can still contribute and collaborate with lecturers and peers using cell phones. Using mobile flipped is easy for them as they can divide their time between work and study independently. This is supported by Hastings (2009) where the results of the study show that students can learn autonomously and can set a specific time while they are busy using technology in the teaching and learning process. The use of flipped mobile learning will guide adult learners to learn autonomously. Thus, adult learners can learn autonomously with the guidance of mobile open-distance learning settings.

CONCLUSION

The rapidly changing nature of technology affects everyone (Rafiza, 2016; Beekman, 2005). Evans (2011) agrees that the positive effects of technological growth have influenced the development of instructional technology. Information technology applications must be planned systematically and ensure the effectiveness of the teaching and learning process. According to Bates (2014), the majority of adult learners are working people and they receive less guidance from lecturers. However, adult learners have more difficulty balancing education, career, and family. They have a responsibility to learn because they decide their own time and place in the appropriate place (Wang et al., 2013). Garrison and Anderson (2003) stressed that the use of technology in the teaching and learning process depends not only on the learning content but should take into account the effectiveness of teaching and learning principles and accuracy in designing teaching and learning systems for adult students. This is because Qayyum (2009) states that adult students are more marginalized with the use of technology compared to younger students.

The development of the use of technologies in the teaching and learning process, especially in the open distance program should be used as best as possible to meet the needs of students throughout the program (Jaka, Ardianto, & Heru, 2020). As an adult learner, they need to diligently add knowledge and be disciplined throughout the learning process.

They also need to take the initiative to identify learning styles that suit them as well as review the skills needed to improve achievement in learning. Mazanah and Carter (2002) argue that if the learning situation is not related to the career or prospects of adult students, they divert their attention to other things that benefit them more. Imel (1998) also stated that a learning environment that is capable of meeting the needs of adult learners should be identified at the outset to ensure success in creating programs that involve adult learners.

Lyle and Elizabeth (2002) also agreed that one of the aspects that contribute to adult learners learning problems is the aspect of a student's failure to select and apply a learning approach appropriate to their learning process. Therefore, researchers suggest that using collaborative tools is suitable to be used in the teaching and learning process so that adult learners can learn more effectively.

In this study, applying mobile flipped in an open distance learning program contributed to a better understanding of the use of technology in teaching and learning processes specifically for adult learners. The use of mobile flipped allows students not to be physically present or face to-face in class. Class time will be more valuable for them to discuss and exchange ideas because they have learned the content outside of class time. Lage et al., (2000) stated that lecturers found that there is a time limit to teach course content to their students.

Therefore, in this study, the use of mobile-flipped has been proven to be an advantage for use in the teaching and learning process for adult learners. The teaching and learning process using mobile-flipped open-distance learning benefits students and lecturers in the context of learning. According to Hughes (2012), students can review and discuss course content with lecturers in class. In addition, the presentation of information will not bore students, thus maintaining their interest throughout the teaching and learning process using a mobile approach.

According to Salleh and Aziz (2012), traditional classrooms seem irrelevant in 21st-century learning. Therefore, this study can help instructional designers create better learning methods for adult students in using mobile devices in the teaching and learning process. This can help attract adult students to learning activities and is also beneficial for lecturers who aim to change the approach to their teaching and learning by using technology. Similarly, this study could be one of the references for other researchers to explore more deeply mobile flipped in open-distance learning environments. These findings have implications for educators especially for those involved in the field of adult education as they need to consider students' choices when using mobile in the teaching and learning processes. It is hoped that this study will encourage future researchers or policymakers to fill the literature on mobile-flipped, exploring further studies in designing and evaluating mobile-flipped arrangements and publishing in the mobile-flipped specifically in an open distance learning setting. Also, future studies may not only focus on established online videos from websites but also instructional designers can create videos to entice adult students to watch those videos.

Acknowledgements

The author would like to acknowledge the University Malaya for the financial support through the University Grant -UMG0030-2021 (UM.0000412/HGA.GV).

References

- 1) Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: definition, rationale and a call for research. *Higher Education Research & Development*, 34(1), 1-14.
- 2) Alden, J. (2013). Accommodating Mobile Learning in College Programs. *Journal of Asynchronous Learning Networks*, 17(1), 109-122.
- 3) Baepler, P., Walker, J. D., & Driessen, M. (2014). It's not about seat time: Blending, flipping, and efficiency in active learning classrooms. *Computers & Education*, 78, 227-236.
- 4) Bates, A. (2014). Instructional design for distance learning. *Instructional Design: International Perspectives II: Volume I: Theory, Research, and Models: volume II: Solving Instructional Design Problems*, 369.
- 5) Beekman, G. (2005). Computer confluence. Exploring tomorrow's technology (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- 6) Bergmann, J., & Sams, A. (2014). Flipped learning: Maximizing face time. *T+D Magazine*, 68(2), 28-31.
- 7) Brophy, J. (2010). *Motivating Students to learn* (3rd ed.), New York: Taylor Francis.
- 8) Brock, E.O. (2020). Integrating Real Practical Experience in ICT Education, *Journal of Information Systems Education*, 12(3), 133-140.
- 9) Butt, A. (2014). Student views on the use of a flipped classroom approach: Evidence from Australia. *Business Education & Accreditation*, 6(1), 33-43.
- 10) Chen, H. L., & Summers, K. L. (2015). Developing, using, and interacting in the flipped learning movement: Gaps among subject areas. *The International Review of Research in Open and Distributed Learning*, 16(3).41-63.
- 11) Chen, Y., Wang, Y., & Chen, N. S. (2014). Is FLIP enough? Or should we use the FLIPPED model instead?. *Computers & Education*, 79, 16-27.
- 12) Cohen, L., Manion, L. & Morrison, K. (2000). *Research Methods in Education 5th Edition*. London: RoutledgeFalmer.
- 13) Darden, D. (2014) Relevance of the Knowles Theory in Distance Education. *Creative Education*, 5, 809-812.
- 14) Davies, R. S., Dean, D. L., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development*, 61(4), 563-580.
- 15) Dhito, A.T.P., Marsekal, D.S., & Reny, S.D, (2020). Implementasi Intelligent IoT Gateway Sebagai Pengendali Jarak Jauh Pada Raspberry Pi Berbasis OpenWrt, *Jurnal Riset Komputer*, 7(1), 104-113.
- 16) El-Hussein, M, O, M., & Cronje, J.C. (2010). Defining Mobile Learning in the Higher Education Landscape, *Journal of Educational Technology & Society*, 13 (3), 12-21.
- 17) Evans, D. (2011). Turning lessons upside down. *The Times Educational Supplement*,4.
- 18) Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learning & Leading with Technology*, 39(8), 12-17.
- 19) Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21st century: A framework for research and practice*. London: RoutledgeFalmer.
- 20) Glastra, F. J., & Strauss., P. E. (2004). Lifelong learning as transitional learning. *Adult Education Quarterly*, 54, 292-301.

- 21) Halili S.H., Fathima N., Razak R. (2022). Exploring Relevant Employability Skills 4.0 For University Students Readiness in The Work-Based Learning Program, *Journal of Technical Education and Training*, 14(3), 68-78
- 22) Hastings, R. (2009). Collaboration 2.0. *Library Technology Reports*, 45(4), 16-18.
- 23) Hermans, R., Tondeur, J., van Braak, J., & Valcke, M. (2008). The impact of primary school teachers' educational beliefs on the classroom use of computers. *Computer and Education*, 51, 1499- 1509.
- 24) Hillesheim, G. (1998). Distance learning: Barriers and strategies for students and faculty. *The Internet and Higher Education*, 1(1), 31-44.
- 25) Huang, H. (2002). Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology*, 33(1), 27-38.
- 26) Hung, H. T. (2015). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning*, 28(1), 81-96.
- 27) Hong, J. C., Yu, K. C., & Chen, M. Y. (2011). Collaborative learning in technological project design. *International Journal of Technology and Design Education*, 21(3), 335-347.
- 28) Imel, S. (1988). *Guidelines for working with adult learners*. Adult Career and Vocational Education Columbus OH. (In ERIC Document Reproduction Service No.ED299 456).
- 29) Jaka, P., Ardianto, P., & Heru, P. (2020). Implementasi Teknik Komunikasi Serial Half Duplex Pada Kendali Jarak Jauh Lampu Ruang Rumah Berbasis Internet Of Things (IOT), *Jurnal Teknologi Sistem Informasi dan Sistem Komputer*, 3(1), 32-40.
- 30) Jim, B. (2008). *Cultural components of technology and its implications for adult education*. [Online]. {Accessed 20 June 2009}. Available from World Wide Web: <http://www.adulterc.org/Proceedings/2008/Proceedings/Berger.pdf>
- 31) Lage, M. J., Platt, G.J., & Treglia, M. (2001). Inverting the classroom: A gateway to creating an inclusive learning environment. *Journal of Economics Education*, 31 (1), 30-43.
- 32) Md, N.S. (2001). *Pendidikan jarak jauh*. Universiti Sains Malaysia: Utusan Publications & Distributors Sdn Bhd.
- 33) Nadire, C., & Huseyin, U. (2009). Improving critical thinking skills in mobile learning, *Procedia-Social and Behavioral Sciences*, 1 (1), 434-438.
- 34) Nick, R. (2012). An agenda for mobile learning, *British Journal of Educational Technology*, 43 (3), 355-356.
- 35) Norman, H., Nordin, N., Din, R, Ally, M., & Dogan, H. (2015). Exploring the Roles of Social Participation in Mobile Social Media Learning: A Social Network Analysis, *International Review of Research in Open and Distributed Learning*, 16 (4), 205- 224.
- 36) Jamaludin Mohaiadin. (1998). *JPA 201 – Educational Management: Module 2*. Penang: School of Distance Education, Universiti Sains Malaysia.
- 37) Jamaludin, R., & Osman, S. Z. (2014). The Use of a FC to Enhance Engagement and Promote Active Learning. *Journal of Education and Practice*, 5, (2), 124-131.
- 38) Johary, J. (2015). FC at the Defence University: A Pilot Study. Recovered from [http://eli.elc.edu.sa/2015/sites/default/files/\(51\)%20Jowati%20Juhary.pdf](http://eli.elc.edu.sa/2015/sites/default/files/(51)%20Jowati%20Juhary.pdf)
- 39) Halili, S.H., Sulaiman, H., & Rafiza, A.R. (2017). Information and Communications Technology Acceptance among Malaysian Adolescents in Urban Poverty. *Turkish Online Journal of Educational Technology*, 16, 47-54.
- 40) Hughes, H. (2012). Introduction to flipping the college classroom. In Proceedings from *World Conference on Educational Multimedia, Hypermedia and Telecommunications*, Chesapeake: AACE, 2424-2438.
- 41) Kalloo, V., & Mohan, P. (2012). Correlating Questionnaire Data with Actual Usage Data in a Mobile Learning Study for High School Mathematics. *Electronic Journal of e-Learning*, 10(1), 76-89.

- 42) Knowles, M. (1991). In *Adult Education: Evaluation and achievements in a developing field of study*. John M. Peters (Ed.), San Francisco, CA: Jossey-Bass.
- 43) Knowles, M.S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. 2nd ed. New York: Cambridge Books.
- 44) Knowles, M. S., Holton, E. F., & Swanson, R. A. (2005). *The adult learner: The definitive classic in adult education and human resource development*. 6th ed. London: Elsevier.
- 45) Kristine, P. (2007). *m-Learning: Positioning educators for a mobile, connected future*. *International Review of Research in Open and Distance Learning*, 8, (2), 1-17.
- 46) Luvai, F, M. (2007). Mobile learning: A framework and evaluation. *Computers & Education*, 49(3), 581-596.
- 47) Lyle Y., & Elizabeth, K. (2002). *Collaborative inquiry as a strategy for adult learning*. San Francisco: Jossey-Bass.
- 48) Maryam, F, K., & Siti, H.H. (2015). Podcast acceptance to enhance learning science vocabulary among Iranian elementary students. *The Online Journal of Distance Education and e-Learning*, 3 (4), 51-60.
- 49) Mazanah, M., & Carter, G. L. (2002). *Designing and facilitating adult learning*. Serdang, Selangor: Universiti Putra Malaysia.
- 50) Merriam, S. B. (2001). Andragogy and self-directed learning: pillars of adult learning theory. *New Direction for Adult and Continuing Education*, 89, 3-13.
- 51) Nederveld, A., & Berge, Z. L. (2015). Flipped learning in the workplace. *Journal of Workplace Learning*, 27(2), 162-172.
- 52) Osman, S. Z., Jamaludin, R., & Mokhtar, N.E. (2014). FC and traditional classroom: lecturer and student perceptions between two learning cultures, a case study at Malaysian polytechnic, *International Education Research*, 2 (4), 16-25.
- 53) Overmyer, J. (2012). FCs 101. *Principal (September)*, 46–47. Ozan, F., & Adile, K. (2015). Flipped learning: Misunderstandings and the truth, 5 (1), *Journal of Educational Sciences Research*, 215-229.
- 54) Qayyum, A. (2009). *Is there a technology bias against adult learners?*. [Online]. [Accessed 19 February 2015]. Available from World Wide Web: <http://www.adulterc.org/Proceedings/2009/proceedings/qayyum.pdf>
- 55) Rafiza, A.R., Dalwinder, K, Siti Hajar, H. & Zahri, R. (2016). Flipped ESL Teacher Professional Development: Embracing Change To Remain Relevant. *Teaching English With Technology*, 16(3), 85-102.
- 56) Rafiza, A.R., Yusop, F.D., Siti Hajar, H., & Sri Raman, C. (2015). Electronic Continuous Professional Development (E-CPD) for teachers: bridging the gap between knowledge and application. *Turkish Online Journal of Educational Technology*, 14(4), 14-27.
- 57) Rahman, A.A., Aris, B., Mohamed, H., & Mohd, Z.N. (2014). FC in Malaysian Context. Recovered from http://www.academia.edu/11781982/FLIPPED_CLASSROOM_DALAM_KONTEKS_MALAYSIA
- 58) Rozhan, M. I. (2015). The mobile learning FC. Recovered from <http://www.wseas.us/e-library/conferences/2015/Malaysia/EDU/EDU-10.pdf>
- 59) Salleh, S., & Aziz, A. (2012). Teaching Practices Among Secondary School Teachers in Malaysia. DOI: 10.7763/IPEDR. 2012. V47. 14
- 60) Sams, A., & Bergmann, J. (2013). Flip your students' learning. *Educational Leadership*, 70(6), 16-20.
- 61) Schmidt, S. M., & Ralph, D. L. (2014). *The Flipped Classroom: A twist on teaching*. The Clute Institute International Academic Conference, San Antonio, Texas, USA 2014.
- 62) Schwabe, G., & Goth, C. (2005). Mobile learning with a mobile game: design and motivational effects, *Journal of Computer Assisted Learning*, 21 (3), 204-216.

- 63) Serin, O. (2012). Mobile Learning Perceptions of the Prospective Teachers (Turkish Republic of Northern Cyprus Sampling). *Turkish Online Journal of Educational Technology-TOJET*, 11(3), 222-233.
- 64) Shelly, G.B., Cashman, T. J., Gunter, R. E., & Gunter, G. A., (2004). *Teacher discovering computers.integrating technology in the classroom*. (3rd Edition). Australia: Thomson Course Technology.
- 65) Shih, J.-L., Chuang, C.-W., & Hwang, G.-J. (2010). An Inquiry-based Mobile Learning Approach to Enhancing Social Science Learning Effectiveness. *Educational Technology & Society*, 13 (4), 50–62.
- 66) Siti, H.H., Nurul, H., & Rafiza, A.R. (2018) Traditional versus virtual learning: How engaged are the students in learning English literature. *Indonesian Journal of Applied Linguistics*, 8(1),79-90.
- 67) Slentz, A. (2009). Going global to last. *HR Magazine*, 54 (8), 36-38.
- 68) Tasir, Z.S, Baharuddin, A, Mohamad. B.L, Jamalludin, M.D, Norah, M.S & Mohd,
- 69) N.H. (2009). *A survey on andragogy principles for web based instruction in Malaysia higher education*. Project Report. Faculty of Education, Skudai, Johor. [Online]. {Accessed 13 May 2010}. Recovered from <http://eprints.utm.my/9151/>
- 70) Telegram (2021). Telegram: A new era of massaging. <https://telegram.org/> Messenger
- 71) Trochim, W. M. (2002) *Likert scaling*. Recovered from <http://www://rochim.human.cornell.edu/kb/scalik.htm>
- 72) Wang, C., Shannon, D. M., & Ross, M. E. (2013). Students' characteristics self-regulated learning, technology self-efficacy and course outcomes in online learning. *Distance Education*, 34(3), 302-323.
- 73) Wang, S., & Heffernan, N. (2010). Ethical issues in Computer-Assisted Language Learning: Perceptions of teachers and learners. *British Journal of Educational Technology*, 41(5), 796-813.
- 74) Wikipedia. (2015). Line (application). Recovered from [https://en.wikipedia.org/wiki/Line_\(application\)](https://en.wikipedia.org/wiki/Line_(application))
- 75) Williams, D., Coles, S., Wilson, K., Richardson, A., & Tuson, J. (2000). Teachers' and TMK: Current use and future needs. *British Journal of Educational Technology*, 31, 307-320.
- 76) Wong, L. H. (2012). A learner-centric view of mobile seamless learning. *British Journal of Educational Technology*, 43(1), E19-E23.
- 77) Yusup, H. (2001). *Design and instructional system*. USM: Utusan Publications & Distributors Sdn Bhd.