

INVESTIGATING THE USE OF COLLABORATIVE TOOL IN AN ADULT LEARNING ENVIRONMENT

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Abstract: This study was carried out in order to investigate the Knowles (1980) adult learning principles preferred by adult learners using collaborative tool in teaching and learning process. The theoretical foundation for this study is the andragogy theory by Knowles (1980) that holds a set of adult learning principles such as learners' self-concept; motivation to learn, readiness to learn, role of learners' experience, learners' need to know and learning orientation. Five adult learners from the postgraduate program in University of Malaya were selected and interviewed. Data were collected and coded to summarize the main themes. The study findings show that in identifying the principles of adult learning introduced by Knowles (1980) with the use of Wiggio, the opinion of all respondents are positive toward application of collaboration tools in line with the adult learning principles. This means usage of Wiggio is suited to the principles of adult learning introduced by Knowles (1980). The findings have implications for educators especially for those involved in adult education field as they need to consider adult learners preferences when planning teaching and learning activities with the usage of technology.

Keywords: Adult learning, collaborative tool, adult students, collaborative learning

INTRODUCTION

According to Slentz (2009), adult learners have returned to learning institutions to get greater opportunities for learning to improve their livelihood and obtain better job opportunities. Among the factors affecting adult learners are the differences in the strategies adopted by the learners, activities in planning and the motivation of the learners themselves (Hisham Dzakiria & Rob Walker, 2003). Knowles (1980) defined the term adult from various aspects namely from the aspect of biology, law, social and psychology. From the biology aspect, an individual is defined as an adult when he or she has reached a certain age level and is capable of producing children. From the legal aspect, those defined as adults are qualified to vote and obtain a driving licence. From the social aspect, the term adult is seen when the individual plays a role as a mature person, with a career and family. From the psychological aspect, the individuals are regarded as adults when having achieved a level of capability to manage their own lives by themselves. Among the things to be understood in adult learning are from the aspect of the learner's own needs, the characteristics or nature of the learner as well as the background of the learner. Adult learners are an active group of learners who need knowledge to solve the problems they face and need a teaching and learning (T&L) process that can meet their interests and needs (Mazanah Muhamad & Carter, 2002). Clearly, adult learners have wide experience in the fields they undertake.

Several theories have been put forward to explain the learning process in adults. According to Merriam (2001), the theory of andragogy, theory of self-directed learning, theory of social learning, socio-cultural theory and theory of transformative learning are among the earliest theories in adult learning, while the cognitive situation theory, critical theory and post-modernism theory are the adult learning theories featuring extensions of adult learning theories. Andragogy is one of the new theories often used in adult learning (Merriam & Caffarella, 1991). Beginning from the 1960s, andragogy posited that adult learning differed from children's learning. This was because adults do not just receive knowledge but are active learners in processing their learning (Knowles et al., 2005). According to Merriam (2001), andragogy is accepted as a guide in adult learning. Knowles emphasized that adults are more self directed, responsible for their own decisions and the main aim of adult education is learning and not just teaching. The theory of adult learning, more widely known as andragogy, is appropriate for use in creating a program or course specifically using technology in the T&L process.

The study by Tasir et al. (2009) to ascertain the principles of adult learning that fulfil the needs and are appropriate to learners and pre-service teachers in Malaysia in online learning found that respondents involved were giving high agreement to the four principles of adult learning namely the need to know why one must learn a certain topic; readiness for learning; orientation to learning; and motivation for learning. The findings of this study also bring implications to the parties involved in designing online learning applications such that they consider learners' needs especially adult learner needs before planning any teaching and learning activity. This is because Lyle and Elizabeth (2002) have listed several aspects that can give a negative impact on adult learning namely lack of learning skills, limited knowledge of learning approaches and strategies, learners fail to choose and practise a learning approach suited to themselves that can enhance their learning, students do not show improvement in learning when compared with other students and the course followed hampers the smoothness of the learning process on the whole.

Knowles et al. (2005) stated that technology use in adult learning has opened up new opportunities and offered new and more interesting learning experiences. Technology use in adult learning can enhance the T&L process and attract the interest of learners to involve in the learning materials. Nevertheless, Berger (2008) emphasized that technology use still has not made a significant impact on adult learning. According to Hillesheim (1998), the problems related to technology use in information delivery specifically for online courses still are main obstacles in adult learning. Adult learners always face diverse types of learning situations. According to Ali Sher (2009), adult learners with families and careers prefer to follow more flexible learning programs more comfortable for them. In designing training using computers, Knowles (1980) applied the relevant principles of andragogy in designing the training. Before designing the training materials, lecturers must clarify why something needs to be taught, they need to orientate tasks and not rely on memorization, they need to take into account the diversity in background of learners and learning activities must be suited to the experience level and use of computers.

Applications of information technology (IT) must be designed in a systematic and organized way to guarantee the effectiveness of the T&L process. Garrison and Anderson (2003) stressed that technology use in the T&L process does not just depend on the content of learning only but must take into account the effectiveness of the T&L principles and accuracy in designing T&L systems for adult learners. Qayyum (2009) stated that adult learners were more marginalized with the use of technology as compared to younger learners. Mazanah Muhamad and Carter (2002) were of the opinion that if the learning situation was not related to career or future prospects of the adult learner, they shift their attention to other matters that give more benefit to them. Imel (1998) also stated that a learning environment capable of fulfilling the requirements of adult learners has to be identified first to ensure success in creating programs involving adult learners. Lyle and Elizabeth (2002) also stated that one of the aspects contributing to adult student learning problems is the aspect of failure of student to choose and apply a learning approach suited to their learning process. Hence, the researcher opined that using collaborative tools are suited to be use in T&L process so that adult learners are able to learn more effectively.

Collaborative means two or more people who are inter-related, together and they share the same social group. The concept of collaborative allows the students working together and helping each other to be successful learners in three aspects; intellectual, social and problem solving in the classroom (Yin, 2008). According to Wikipedia (2013), a collaborative tool is something that helps people to collaborate and everything that helps to solve a predefined task together in a group more easily is an effective collaborative tool. Moore (2007), Schrum & Solomon (2007), Alexander (2006) and Jenkins (2006) stated that the use of Wiggio, blogs, podcasts, and RSS feeds are considered a prominent Web 2.0 technology which it is a conceptual category for Internet tools that include emergent technological tools. These tools enable users to develop web content collaboratively in an open, public, and participatory manner. Further, these tools also enable students to interact with each other virtually and have become the best socialisation agents who require students to update their knowledge and skills through a collaborative learning.

It found that the 'Wiggio' as a collaborative tool enables to subdivide the users into the whole group or individuals. It is a user-friendly tool and includes with many features such as allow them to post assignments, calendar, file sharing, video, links to other website and more. Lecturer and students are able to have access to their own file, posting as well as sharing information which is found to be useful especially to adult learners. In this context, collaboration includes more than two people communicating with one another online to develop knowledge by contributing and sharing information on the Wiggio application. Collaboration using Wiggio can help lecturers and students to work closely together either synchronous or asynchronously on a Wiggio topic. These can increase students' reflective learning and enrich their experiences beyond the content being cogenerated as well as help to change students' writing practices to include more citations and critical evaluation of resources as well as influence individuals' knowledge and beliefs about the content. Through using Wiggio, interactions with other members of a group, some of which might be more knowledgeable others.

At University of Malaya, we have moved towards online collaborative learning practice in our postgraduate program for Effective Teaching Model course. One of the ideas behind these approaches is to encourage students to collaborate with each other, to share problems themselves, and to explain the issues to their peers. There are other advantages of using these methods such as students develop communication and interpersonal skills; enhances participation and their interest in their studies. During the session, lecturer and students actively interact with each other either synchronous or asynchronous. This involvement encourages students to feel that they are part of the university, and that the university experience is important and worthwhile. This is particularly important as students who enroll for this course are adult learners where they are part-time students, workers and tend to visit the University only for lectures and tutorials.

Yusup Hashim (2001) stated that the learning process is meant to produce students who are balanced form the physical, emotional and spiritual aspect and not just to pass examinations. The role of IT in adult education must be seen as something that activates and encourages the learning process more effectively. Thus, this research is aimed at determining the adult learning principles most suited to the adult learners undergoing postgraduate program by using collaborative tool, specifically Wiggio as one of the instructional media use for the course. This paper also attempts to fill the gap in adult education research by investigating the impact of information technology, specifically ‘Wiggio’ as collaborative tools to support T&L process for adult learners. Therefore, this study will enable deeper understanding regarding applications of the adult learning principles introduced by Knowles (1980) as they relate to use of the collaborative tool namely Wiggio to support T&L process.

METHODOLOGY

This study was conducted at the University of Malaya and focused on a collaborative tool namely Wiggio as a tool for supporting the T & L process. The use of Wiggio is focused in this study considering that Wiggio is one of the applications of Web 2.0 having characteristics such as collaborative, interactive, producing knowledge and enabling sharing of ideas including information through the web (Grosseck, 2009). Chen, Yen, and Hwang (2012), Kitsantas and Dabbagh (2011) and Aharony (2009) stated that using Web 2.0 technology in the T&L process encourages users to create their own content, collaborate, share information and interact among themselves.

In order to investigate the use of Wiggio among adult learners in an adult learning environment, a qualitative study was employed by the researcher and interviews were conducted with five adult learners who were registered in a Doctoral program in the Department of Curriculum of Instructional Technology, University of Malaya. The researcher interviewed the participants based on a list of questions expanded from the research questions. The questions were open-ended, which allowed the participants to freely express their experiences, thoughts, and feelings about their learning experience using Wiggio as a collaborative tool. Follow-up questions were improvised during the interview. Each interview lasted approximately 60 minutes and was recorded. These five students were purposefully sampled (Patton, 2002) from an Effective Teaching Model course for Semester 2, 2013/2014. The profile information for the five participants is briefly displayed in Table 1.

Table 1. The Profile of the Five Participants

No.	Participants	Gender	Profession
1	A	Female	Full-time student
2	B	Male	Teacher
3	C	Male	Lecturer
4	D	Male	Lecturer
5	E	Female	Consultant

The interview questions includes of 12 questions related to the adult learning principles that has the validity and reliability of which had been verified by previous research by Siti (2007). The researcher transcribed the interviews and coded the data pool with reference to the research questions in order to summarize the main themes. Through repeated reviews of the interview data, six major themes related to the adult learning principles such as learners’ self concept, readiness to learn, motivation to learn, learners’ experience of learning, need to know the reason for learning, and orientation to learning were summarized and reported in the section below. In reporting the research outcomes, pseudonyms were used to protect the students’ privacy.

FINDINGS AND DISCUSSION

Six themes emerged from the data analysis with reference to the research objective. In identifying the principles of adult learning introduced by Knowles (1980) with the use of collaborative tools, the findings of this study indicate that all respondents is positive toward application of collaborative tools, namely Wiggio in line with the

adult learning principles. This means usage of Wiggio is suited to the principles of adult learning introduced by Knowles (1980). Each of these findings will be discussed in this section:

1. LEARNERS' SELF CONCEPT

Q1.1: "I would be more responsible in the learning process when using this application"

Most students in this study mentioned that they developed into more responsible when using Wiggio to collaborate with peers. As adult learners, they constructed their knowledge with limited guidance from instructor to achieve their learning goal. Therefore, in this study they proved that they had to put much effort to share and contribute their own ideas, knowledge and almost everything in teaching and learning activities. From the students' responses, it could be deduced that all students agreed if Wiggio had constructed their responsibility when collaborating with peers. For example, student A mentioned when learning by using Wiggio, everyone has to contribute their own idea and knowledge and take more responsibility on their own learning.

It was inferred that the role of constructivist approach in a collaborative learning had constructed students' responsibility on learning behaviors and the synthesis of information required for effective critical thinking. This finding confirmed the testimony contributed by Hong, Yu and Chen (2011), when students learn collaboratively by using numerous Web 2.0 tools, they can be more responsibility and awareness on their own learning because of little guidance or instruction from instructor.

Q1.2: Are you more independent in your learning when using this application?

One objective of the collaborative learning activities was to develop affective behaviors such as independent participation and practice; and teamwork or a shared purpose among classmates. This study reported that the use of Wiggio had improved students' independent learning or self-directed learning skill. As adult learners, students already have much experience or at least the background of knowledge. Therefore, they could manage and obtain sources of knowledge independently or did not make the instructor as the central of knowledge. This means that knowledge came from themselves and from peers, while the instructor would only contribute the answer when necessary. According to interview report in this study, the students in general acknowledged that by using Wiggio had helped them to learn more independently on their awareness. They could choose the time of study flexibly according to their free time. For example, student C mentioned: "*Yup, I can manage my time to participate.*"

It was evident that the students who had a busy schedule like student C who worked as a lecturer could still contribute and collaborate with peers asynchronously by using Wiggio. This student looked convenient because by using Wiggio he could divide his busy time between work and study independently. It was coherence with the one by Hastings (2009), asynchronous type of communication is very useful for groups with busy schedules, which can make setting a specific time during their busy day and students can learn autonomously. The findings of this study showed that all of the participants agreed that they have put in effort to share and contribute their own ideas, knowledge and almost everything regarding learning process when using Wiggio in teaching and learning process. This showed that with the use of Wiggio, students were more responsible for their T&L process and were more independent in obtaining information required for learning.

2. MOTIVATION TO LEARN

Q2.1: Does the learning process through the application increases your motivation to learn?

The second adult learning principle was motivation for study. For more effective learning, motivation is important for encouraging the student to take action (Brophy, 2010). This is because when a student is motivated to learn something the learning process becomes more effective since the learner will pay more attention and observe the instructions given in the teaching and learning session. Students who are motivated to learn will have greater success than those who are not (Dornyei, 2003).

The analysis of this study showed that most students had motivation in learning by using Wiggio. The main reason of students' motivation is collaborative work, they could work together, exchange idea and solve the problem. Students believed that group activities were fun, enjoyable and interesting which also made students have ambition to learn. The researcher assumed that students had intrinsically motivated when learning collaboratively using Wiggio, it showed students' interesting toward group activities. It is supported by what mentioned by Deci and Ryan (2002), students' intrinsic motivation produced when they engaged in learning activities with positive feelings such as fun, exciting and enjoyable. It can be implied that online communities for collaborative learning such as by using Wiggio had contributed to the fact that most students thought the learning activities were fun and motivated.

Students' motivations were produced because the time to review the content was sufficient. It was mentioned by student A, she had motivated and more engaged in T & L activities because of more time to think and prepare the content to be mastered. Student B noted that by learning through Wiggio, he felt audacious to ask questions and explain his idea to others. He compared collaborative learning by using Wiggio with traditional classroom activities. He stated that in traditional classroom, high ability students tended to dominate the class and they became more active rather than low ability students, whereas low ability students tended to be silent and passive because of shyness and unconfident. Then, when students learned in collaborative way like using Wiggio, low ability students were also confident to participate in class discussion and could express their idea by using texts, video or audio. Such a possibility has been reported by Vizcaíno (2004) on a simulated student agent for improving collaborative learning, it showed when a passive student was encouraged to participate in a collaborative learning, they always took part by proposing an answer or giving his/her opinion. It could be assumed that learning collaboratively could increase students' motivation. All students in this study had motivation to learn by using Wiggio because they had occasions to express their idea virtually. Then, learning in peer had helped each other to achieve the same goal by exchanging idea.

Q2.2: Are you confident to use this application in your learning process in future?

When students have motivation in learning, they will feel confident in expressing their idea (Liou & Kuo, 2014). This is what mentioned by students in this study, most students declared that they were confident to use this application when learning activities because they had a motivation. The researcher assumed that students' motivation in learning activity brought a positive attitude toward students' confident. Most students in this study mentioned that they wished to apply this application in other learning course and group. Student A mentioned in the interview that she felt confident to use this tool in the future practice as her profession as a teacher, she believed that this tool was benefit for students and teacher, "..... Nevertheless, I am glad that I was introduced to Wiggio because it can be useful in many ways, both for a student and for an educator, I will try to incorporate it in my teaching practice in the future." confessed by student A. Student B also felt confident by using this application in learning process. She mentioned that she would use this application it in her university to enhance students' interaction virtually outside the class. She also stated that this tool had helped her in learning activities.

3. LEARNERS' READINESS:

Q3.1: Are you ready to learn better and capable of achieving good performance by using Wiggio in their T&L process? Why?

The third principle of adult learning is learners' readiness. The readiness of students in learning activity produce engagements to active learning and performance in the class discussion. For example, student A mentioned that she could engage and think more effectively when learning with Wiggio because of team work. The researcher assumed that the students' readiness of T & L by using Wiggio generated by their collaborative work, they could exchange the idea and learn from each other to support their understanding toward the content. It was correlated to what mentioned by student B, he claimed that by exchanging the idea made him better understanding the subject and ready to learn and perform. This finding confirmed the testimony contributed by Mikkelsen and Gronhaug (1999), they noticed that team oriented work environments or collaborative learning provide opportunities for low ability person to learn from others, help one another through working together, sharing information, and watching out for one another, therefore all students felt ready to learn and perform. According to Van Merriënboer and Paas (2003), based on social constructivism, when students collaborate and join each other to achieve their learning goal together, it will strengthen the powerful learning environment.

Besides exchanging idea in group activity, students had much time to prepare and learn the content outside the class, it was different with traditional classroom which had limited time to learn. For example, student C mentioned that by using Wiggio, he had extra time to review the subject outside the class and continue discussing the issue with other students. He mentioned that he felt capable to achieve a good performance and master the content because of flexible and few time. It also was the same statement with student D, he expressed that he could learn better because he had her own flexible time to learn, but he admitted that sometimes asynchronous learning made him forget to check online assignment. Overall, the students in general acknowledged that they were ready to achieve good performances when collaborating using Wiggio.

The researcher is of the opinion that the T&L process will be more effective if the students can use their existing experience in their studies. This is because adult learning is effective if the topic of learning has immediate usefulness to their work or personal life, focused on problems, not orientated to content; in fact the basis of learning activity of the adult learner is experience including any mistake made.

Q3.2: Are you able to learn better with you use of this application?

Students in this study showed that they could learn better by using Wiggio, such as what mentioned by student A, *“Yes, as mentioned earlier, Wiggio encourages me to learn independently and constructively as I get to collaborate with my course mates to widen my knowledge.”* Exchanging idea was the most crucial thing to learn better when students collaborated in Wiggio. Interaction and exchanging idea also agreed by student B who mentioned that each student could exchange information and learn from other, also when teacher involved in discussion, it would be better to learn because they could ask the questions what they did not understand. Pargman and Wærn (2003) noticed that students learn better in collaborative learning because it is a learning scenario in which learners work together to solve the problems, exchange ideas and give feedback in peers. Brindley, Blaschke and Walti, (2009) also mentioned that by using various tools of Web 2.0 in collaborative learning, learners are able to be active in learning activities and they could actively participate in discussions and problem solving, exchange the idea and give feedback in peers.

Wiggio as a Web 2.0 tool could save the content they had learnt and they could review them after the class. It was expressed by student C that believed by using Wiggio, he could review of what he had learned before. Student D also mentioned the same view that Wiggio became the reference of study after the class. In this study, the researcher believed that learners are ready to learn better and capable of achieving good performance by applying Wiggio in their T&L process.

4. LEARNING EXPERIENCE

Q4.1: Do you think that the use of this application helps you to practice and develop new skills?

The finding of this study showed that by using Wiggio in a collaborative learning, students knew a new media of learning for T&L process. There are numerous Web 2.0 tool used in T & L, but not all students know and familiar with the tools. After introducing a new tool such as Wiggio, students obtained a new knowledge on the use of Web 2.0 tool for T&L process. For example, student A mentioned that after introducing to Wiggio, he finally knew a new media to collaborate with peers. Student D who had experienced and familiar with this application mentioned that he would consider using this tool in order to attract his students’ interest for the effectiveness in T&L process.

Q4.2: Is the use of these applications play an important role in your learning process?

Student B mentioned that this application was very important for her to interact and communicate with other students and lecturer outside the class. This application was really helpful for a tool of discussion activity. Student D mentioned that he thought her students preferred to have a face to face class activity and online collaboration, he intended to use this tool in her teaching to communicate with her students. In other words, student D noted that Wiggio could be implemented for blended learning approach, the students would learn with face to face in the classroom and interactive activities outside the class by using Wiggio. It is supported by McLaughlin (2012), in blended learning students learn face to face in the classroom and continue learning outside the class virtually by using various tools of Web 2.0 such as Wiggio.

5. LEARNERS’ NEED TO KNOW WHY THEY LEARN

Q5.1: Have you got what is required in the learning process when you use this application?

In this study, students reported that by using Wiggio application they knew how to learn collaboratively. *“Aside from acquiring content knowledge, I learn how to learn collaboratively with other students because previously I was not very exposed to online collaborative learning,”* Confessed student A. With regard to students’ statement, it was inferred that after introducing Wiggio application, students found a new way of learning which previously only familiar with traditional learning. Learning collaboratively by using various kinds of Web 2.0 gave many advantages for adult learners because as adult learners, they have much experience which could be shared to other students, they could exchange idea and work together. Student B and C mentioned that they could obtain much information and new idea through this learning. The students could share the content which will be very helpful to help other students. By using this application, students were aware that they should be active; everyone should be a teacher to explain the idea to others and sometimes became students who listen and respect other ideas. Fearon, Starr and McLaughlin (2012) mentioned that when learning in collaborative learning, adult learners should be aware that they learn with limited guidance from instructor, it means that all students can be instructor to share knowledge to others.

Q5.2: Does this application capable to improve your performance in your studies?

From the students respond in this study, we could conclude that students learn better and construct their critical thinking when they learn collaboratively by using Wiggio, it is supported by what mentioned by student A, *“..... For me, it encourages a lot of thinking and independent learning when we do collaborative learning through Wiggio. Indirectly, I learn better.”* It means that collaborative role played very significant role in enhancing

students' critical thinking and performance. It was confirmed the testimony contributed by Clark (2009), he mentioned that collaborative learning process can construct students' ideas, thoughts, arguments and information. Yukawa (2006) also noticed that students who engaged in collaborative learning will improve their critical thinking because they try to explore their experiences in order to reach new inter subjective understandings and appreciations.

The improvement of students' critical thinking in this study made them confident to respond and ask question in group discussion such as what mentioned by student B, he felt confident to ask critical question to instructor and express his idea virtually. Student C, D and E also noticed that their performance were better when using this application. The improvement of students' performance in collaborative learning had been reported by Walker (2005), he notes that collaborative learning activity leads students to successful learning where students will construct knowledge based on their experience. We can conclude that students are capable of changing their performance with use of Wiggio and this tool can help them improve their performance and critical thinking throughout the T&L process.

6. LEARNING ORIENTATION

Q6.1: Do you show a better performance in your learning process when you use this application?

The design of this course and the features of Wiggio made students learn better. Student B compared his study by using Wiggio with his previous conventional classroom. He noticed that the class by using Wiggio was better because of collaborative work and the application was equipped with impressive features. Student C also confidently mentioned that his performance was better by using Wiggio compared to other class, Wiggio provided many features especially a message or information which would alert the user new information, when other students posted or shared new knowledge, he would directly know and check it. It was different with other tool that not provided alert message. The researcher believed that their statements were related to what reported by Suarez-Brown, Hankins and Williams (2011), they mention that there are many features that effectively support collaborative learning in Wiggio and other application does not have such as events, reminder, forum, conference calls, calendar, poll, folder, meetings and links.

Using Wiggio gave opportunities for all students to talk and express their ideas much easier, such as mentioned by student D, *"I think it gives others a chance to talk. I am very noisy and opinionated in class. Some people don't like that."* this means that when using Wiggio, every student has the same occasion to express their idea and not only dominated by high ability or talk-active students. It is believed that when students learn collaboratively, it will bring whole students to active learning and all of them are equal (Summers, Gorin, Beretvas, & Svinicki, 2005).

Q6.2: Do you believe that the information received is easier to remember when using this application?

The information was easy to remember because all information has been recorded on the Wiggio, students could review the content after the class or whenever they need. *"..... I can remember better when there is a platform for sharing and I can actually read and re-read what is being discussed, With this application, we can track back all the information shared"* confessed student A. Student B also expressed the same idea, he stated that all knowledge had been discussed in the class would be saved on Wiggio and they could be reviewed whenever they needed. Then, Wiggio gave advantages for student who had a difficulty to remember, such as what mentioned by student C, he stated that Wiggio became a good reminder application for him because he had a problem with remembering things such as the content that had been taught in the class.

Overall, the findings of this study indicate that in identifying the principles of adult learning introduced by Knowles (1980) with the use of Wiggio, shows that the opinion of all respondents is positive toward application of collaboration tools in line with the adult learning principles. This means usage of Wiggio is suited to the principles of adult learning introduced by Knowles (1980).

CONCLUSION & RECOMMENDATION

Technology use in adult learning can enhance the T&L process and attract the interest of learners to involve in the learning materials. Adult learners refer to graduate and postgraduate students in higher education (Serdyukov & Serdyukova, 2006). Adult learners study independently because they are mature enough and have previous knowledge and experience in their learning activities. Adult pedagogy is built based on self-directed learners where the learners have their previous knowledge or experience in a current learning situation (Serdyukov & Serdyukova, 2006). The use of Web 2.0 will guide adult learners to study autonomously. The use of Web 2.0 technology in teaching and learning activity has given learners and lecturers many opportunities to establish intensive communication and interaction virtually. Some direct feedback can be given by the lecturer to the students using

Web 2.0. This study demonstrated how Wiggio application might be used to enhance collaborative learning. Students were more responsible and independent in the learning process, increased students' motivation and confident level, students were ready to learn and capable to develop new skills.

The findings have implications for educators especially for those involved in adult education field as they need to consider adult learners preferences when planning teaching and learning activities with the usage of technology. The use of Wiggio can be implemented for different level of students such as secondary school and different subjects. Wiggio also can be used as a platform of blended learning. Students will learn both traditional learning face to face in the class and combine with the use of Wiggio outside the class. The researcher acknowledges that further research and collaboration is needed on the use of various technology Web 2.0 tools in teaching and learning activities, it also should be conducted for all level of learners. Wiggio is potentially applied in blended learning where students use this tool to collaborate with peers when outside the class.

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