

Hybrid Learning for Education Inclusion

Swasto Imam Teguh Prabowo, Achmad Hufad, Didi Tarsidi, Imas Diana Aprilia

Post Graduate School

Universitas Pendidikan Indonesia

Bandung, Indonesia

swasto.teguh@upi.edu, ahmadhufad@upi.edu, didi.tarsidi@upi.edu, imasdiana@upi.edu

Abstract—The purpose of this study was to determine the effect of applying hybrid learning through Quipper media on improving mastery of 2013 curriculum specialization material in inclusive schools. The research method used was a quasi-experimental research design with a control group design pretest random pretest. The study sample was a class X student in one of the senior high school inclusive in the city of Bogor with a random sampling technique. From the results of the study, it can be concluded that Quipper's media improved the mastery of students' concepts better than Edmodo's media in inclusive schools.

Keywords—*inclusive school; 2013 curricula (K.13); assessment; hybrid learning; Quipper*

I. INTRODUCTION

The current movement of world civilization is very dynamic, this implies directly to the face of education for generations who are constantly moving to the dynamics of the civilization [1,2]. The inclusive education system is considered able to compensate for this dynamic [3,4]. One of the most important things is the role of technology in implementation of education. According to NETP the essential role of technology when applied both inside and outside the classroom is able to give a positive influence on: student involvement and learning experience, standards of content, learning resources, complete assessment, and meaningful learning [5].

According to Galis, the role of technology in inclusive education is very important to improve the quality of education for all students, especially for a long time the education of children with disabilities has not been carried out optimally [6]. Initially, the technology was aimed at individuals with disabilities in the military or medical support, but in the early 1800s, technology was addressed to the needs of individuals with disabilities [7]. Then only scholars of science and technology in developed countries began to contribute to ideas and assistive tools [8]. One idea is a hybrid learning system, which combines learning with face-to-face or non-face-to-face [9], with network-based learning media. The role of hybrid learning in inclusive schools is very important which is to make students with disabilities [10], peers, teachers, and parents interact in the learning process, such as basic subjects such as mathematics and reading [11,12].

Hybrid learning/blended learning with Facebook media can improve student achievement, improve student learning rhythms, and increase motivation and pleasure in students [13].

Hybrid learning increases the effectiveness of interaction and expands the network in the learning process, even all students and collaborators can network with the business world as source mobilization [14]. In the Indonesian context, quipper as a hybrid learning media has been used in research and provides more value to instructional teachers [15,16].

II. LITERATURE REVIEW

A. Curriculum 2013 (K.13)

The K.13 curriculum is a curriculum published by the Indonesian government to answer future challenges in education, in the form of raising education standards and exploding demographics and global issues, issues related to environmental issues, technological advances and information, the rise of creative industries and culture and the development of education at the international level. A number of fundamental things that differentiate from the previous curriculum are: Fundamental points in K.13, which are trying to balance hard skills and soft skills through a balanced sharpening of attitudes, competencies, and knowledge [16]. Technically referring to scientific approaches and contextual [17]. The implementation of cooperative models with student team types and peer tutoring [18] have been carried out in classrooms, including using a collaborative approach. Collaborative learning and approaches to learning are believed to change ideas, behavior [19]. Assessment of all aspects. Determination of values for students is not only obtained from the test scores, but also obtained from the values of politeness, religion, practice, attitude and others [20]. Very considerate aspects of technology and computing [21].

B. Assessment

The approved 2013 curriculum can be applied to students with disabilities during assessments made as a central role in education [22] so that the results are compiled into an individual curriculum for the child [23], because in the assessment, self-development, learning modalities of students can be known, and the potential of students can be identified, so that the learning design for students can be compiled and implemented [24]. In this link, it is expected that students with disabilities are not limited to only being able to overcome their problems in learning, but those students are able to find quality of life. from the results of the learning process [25]. There is no standard theory in making assessments, but a number of researchers have made a number of assessment designs that can

be used in learning, such as design [26-28]. In essence the whole approach has three fundamental things in learning theory namely; behavioristic, cognitive, and social constructivist [22,29].

C. Quipper as a Medium in Hybrid Learning Models

Hybrid learning or blended learning is a development process of network-actor / Actor-Network Theory (A-NT) theory [30], where human and non-human factors are intertwined factors in creating prosperity human life [31,32]. Hybrid learning basically makes the process of learning in the classroom and online networks based on quality [9]. Hybrid learning is also able to recognize the learning styles of each student [33]. Quipper is one of the hybrid learning media that entered Indonesia in early June 2014, until July 2017, Quipper was highly recommended by the Office of Education and Culture in the District / City and Province [34]. The use of quipper media is very easy and has many interesting features in it, especially the content of teaching materials in this media have been adapted to the curriculum of KTSP and the 2013 curriculum.

III. METHODOLOGY AND OBJECTIVES

The research site is the Inclusion High School located at Gunungputri, Bogor, West Java. Site selection is based on affordable distance with researchers in order to get better quality of observation, then researchers choose students based on involvement, not just knowledge, so as to provide information needed in research [35]. The selection of subjects based on the science majors in the school, according to the researcher, when students are able to overcome subject difficulties in science teaching, this will make students more able to complete other lessons, in this link, researchers assume with a mindset "anything that cannot defeat humans, then it will make people stronger" [36]. In addition, the benefits of learning mathematics and science can be considered as triggers for ideas that are structured and sustainable or as a reasoning capital for something [37].

The research method used is quasi experiment [38]. The experimental design used in this study was in the form of a randomized pretest-posttest control group design. Initial design, the researchers randomly selected the experimental group and the control group, then pretested the two groups. Furthermore, both groups were given a different learning approach and ended with a post-test. Test equipment on pretest and posttest is the same. The research design can be seen in the following table;

TABLE I. DESIGN OF PRETEST AND POSTTEST GROUPS

Class	Pretest	Approach	Posttest
Experiment	O ₁	X ₁	O ₂
Control	O ₁	X ₂	O ₂

Information:

$X_1 = K.13 + Quipper O_1 = \text{Pretest}$

$X_2 = K.13 + Quipper O_2 = \text{Posttest}$

The research subjects were taken from class with students with disabilities in the inclusion class setting. The selection of the experimental class and the control class was carried out by identifying through data from interviews with special tutors and subject matter specialists. This study involved 30 experimental class students and 30 control class students.

IV. RESULTS, FINDINGS AND DISCUSSION

Increased mastery of specialization material in the experimental class with Quipper has been proven significantly for most students in the inclusive class. The learning process with Quipper media brings out the following advantages: representation, engagement, expression, accessibility and flexibility, congruency where these are fundamental points in inclusive education [39] who use hybrid learning models [40]. The implementation of K.13 well can encourage students to pattern the relationship between their knowledge when learning with application in daily life.

In the study it was found that children with disabilities were able to use web-based and mobile hybrid learning media, according to their diversity. Modification of lesson content requires modification of evaluation in the media. Quipper is able to improve student interaction with teachers, parents, peers, and team collaborators, in classrooms, homes, and other places. The limitations found in this study are the perceptions of teachers and parents with the use of smart phones, the skills of teachers in following up on the latest learning, supporting facilities in schools.

The application of K.13 by using hybrid learning provides an opportunity for students to work with fellow groups in working on questions by discussing and sharing technological insights so that these activities can develop skills, both material and social mastery of students in inclusive classes. This activity is in accordance with the results of several studies that in learning students are divided into small groups, the purpose of the formation of this group is to provide opportunities for students to be actively involved in the thinking process and in learning activities [41]. Hybrid learning using quipper media is able to bring up reflective learning, critical thinking, effective and interactive communication, discuss interpretation in the learning process [42].

The researcher presents in research findings that students including children with special needs prefer the active learning model in building their own knowledge and with it can get better learning outcomes that occur like in the experimental class, this is in line with several studies and studies [43,44]. Subjects in natural science if taught with cooperative, active, concrete, and interesting learning contained in the principles of K.13 and network technology-based, all students have the same opportunities to understand these subjects very well [44-47]. On the other hand, there are still teachers who do not or have not paid attention to the matter and do not have a belief system in teaching inclusive classes [48] especially in science learning and mathematics [49], so that some students including students with disabilities do not get good learning outcomes.

Hybrid learning is not learning that merely focuses on virtual-based learning, hybrid learning requires teachers and collaborator teams to play an important role in creating a

learning environment for their students. Next, if there is no inherent supervision by the teacher and parents, the students will be wrong to focus on using the smart phone. Hybrid learning is not an approach that has its own spirit, but it still has to have a teacher's role, a team of collaborators, parents, and students. The pedagogical competence of a teacher [50] must be improved with a variety of ways and approaches in the face of digital-based learning [51].

V. CONCLUSION

The results of the study have shown that Quipper hybrid learning can improve children's understanding of subject matter in specialization of science in K.13 in inclusive classes, but this will not be achieved without the role of a professional teacher. Teachers are the main actors in the process of mixing different instructional strategies for all students, the combination of subject matter knowledge and pedagogical ability of a teacher gives strength to the learning process, insight and application of technology is one and the skill of running the curriculum is another way and the two are intertwined to form a happy learning process. Then the knowledge of students begins to develop and independence in learning is formed. The limitations of this study are very limited sample schools and limited hybrid learning media, research will be developed in a wider range of samples and more diverse hybrid learning media.

ACKNOWLEDGMENT

This work is supported by the Center for Inclusive Education Study of David El Salam [DES]. Bogor.

REFERENCES

- [1] Pink, D. H., & Pink, D. H., *A whole new mind: Moving from the information age to the conceptual age*, New York: Riverhead Books., 2005.
- [2] Tapscott, D., & Barry, B., *Grown up digital: How the net generation is changing your world (Vol. 200)*., New York: McGraw-Hill., 2009.
- [3] Ainscow, M, Booth, T., & Dyson, A., *Improving schools, developing inclusion.*, London and New York: Routledge, 2006.
- [4] Grzegorz Szumski, Joanna Smogorzewska, Maciej Karwowski, "Academic achievement of students without special educational needs in inclusive," *EDUREV 215*, vol. 21, pp. 33-54, 2017.
- [5] Richard M. Gargiulo & Debbie Metcalf, *Teaching in Today's Inclusive Classrooms: Universal Design for Learning Approach*, Mason: Cengage Learning, 2017.
- [6] V. Galis, "Enacting disability: how can science and technology studies," *Disability & Society/Aquatic Insects*, vol. 26, no. 7, p. 825–838, 2011.
- [7] Blackhurst, A. "Historical perspectives about technology applications for people with disabilities," in *Handbook of Special Education Technology Research and Practice*, Whitefish Bay, WI, Knowledge Design, 2005, pp. 3-29.
- [8] I. Moser, "Disability and the promises of technology: Technology, subjectivity and embodiment within an order of the normal," *Information, Communication and Society*, vol. 9, no. 3, pp. 373-395, 2006.
- [9] C. R. Graham, *Emerging practice and research in blended learning.*, New York: Routledge, 2013.
- [10] Salvador Dukuzumuremyi, Pirkko Siklander, "Interactions between pupils and their teacher in collaborative and technology-enhanced learning settings in the inclusive classroom," *Teaching and Teacher Education*, vol. 76, pp. 165-174, 2018.
- [11] Xiao Zhang & Pekka Räsänen, "Early Cognitive Precursors of Children's Mathematics Learning Disability and Persistent Low Achievement: A 5-Year Longitudinal Study," *Child Development*, vol. 00, no. 0, pp. 1-21, 2018.
- [12] Florina Erbeli, Sara A. Hart, Richard K. Wagner, and Jeanette Taylor, "Examining the Etiology of Reading Disability as Conceptualized by the Hybrid Model," *Scientific Studies of Reading*, vol. 22, no. 2, pp. 167-180, 2018.
- [13] J. R. Carreon, "Facebook as integrated blended learning tool in technology and livelihood education exploratory," *International Journal of Educational Technology*, vol. 5, no. 2, pp. 19-25, 2018.
- [14] Y. Afacan, "Exploring the effectiveness of blended learning in interior design education," *Innovations in Education and Teaching International*, vol. 53, no. 5, pp. 508-518, 2016.
- [15] Zaenal Abidin, Anuradha Mathrani, Roberta Hunter & David Parsons, "Challenges of Integrating Mobile Technology into Mathematics Instruction in Secondary Schools: An Indonesian Context," *Computers in the Schools*, vol. 34, no. 3, pp. 207-222, 2017.
- [16] M. Fadillah, *Implementasi Kurikulum 2013*, Yogyakarta: Arruz Media, 2014.
- [17] M. Hosnan, *Pendekatan Saintifik Dan Kontekstual Dalam Pembelajaran Abad 21*, Jakarta: Ghalia Indonesia, 2014.
- [18] R. E. Slavin, "Effects of Student Teams and Peer Tutoring on Academic Achievement and Time On-Task," *Journal The Journal of Experimental Education*, vol. 48, no. 4, pp. 252-258, 2015.
- [19] R. E. Slavin, "Cooperative Learning and Intergroup Relations.," in *Friends in School*, Academic Press, 1983, pp. 628-634.
- [20] Kurniasih dan Sani, *Pengembangan dan Implementasi Kurikulum 2013*, Bandung: Rineka Cipta, 2014.
- [21] Y. Abidin, *Desain sistem pembelajaran dalam konteks kurikulum 2013*, Bandung: Refika Aditama, 2014.
- [22] Jo-Anne Baird, David Andrich, Therese N. Hopfenbeck & Gordon Stobart, "Assessment and learning: fields apart?," *Assessment in Education: Principles, Policy & Practice*, vol. 24, no. 3, p. 317–350, 2017.
- [23] Harold Kleinert, Elizabeth Towles-Reeves, Rachel Quenemoen, Martha Thurlow, Lauren Fluegge, Laura Weseman, Allison Kerbel, "Where students with the most significant cognitive disabilities are taught: Implications for general curriculum access," *Exceptional Children*, vol. 81, no. 3, pp. 312-328, 2015.
- [24] Karin J. Gerritsen-van Leeuwenkamp, Desirée Joosten-ten Brinke, Liesbeth Kester, "Assessment quality in tertiary education: An integrative literature review," *Studies in Educational Evaluation*, vol. 55, pp. 94-116, 2017.
- [25] Kim-Michelle Gilson, Elise Davis, Dinah Reddihough, Kerr Graham and Elizabeth Waters, "Quality of Life in Children With Cerebral Palsy: Implications for Practice," *Journal of Child Neurology*, vol. 29, no. 8, pp. 1-7, 2014.
- [26] J. Elwood, "Formative assessment: possibilities, boundaries and limitations.," *Assessment in Education: Principles, Policy & Practice*, vol. 13, no. 2, p. 215–232, 2006.
- [27] M. James, *Unlocking assessment. Understanding for reflection and application*, Abingdon: Routledge, 2008.
- [28] L. A. Shepard, "The Role of Assessment in a Learning Culture," *Educational Researcher*, vol. 29, no. 7, p. 4–14, 2000.
- [29] H. Douglas Brown, Priyanvada Abeywickrama, *Language Assessment: Principles and Classroom Practices*, London: Pearson, 2010.
- [30] Alan César Belo Angeluci & Marcello Cacavallo, "Analyzing Blended Learning in Brazil from Actor-Network Theory: A qualitative Study," *American Journal of Educational Research*, vol. 4, no. 9, pp. 669-673, 2016.
- [31] B. Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, New York: Oxford University Press, USA, 2005.

- [32] Michel Callon, John Law, Arie Rip (eds.), *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World*, London: Palgrave Macmillan UK, 1986.
- [33] M. S. Hasibuan & LE Nugroho, "Detecting learning style using hybrid model," in 2016 IEEE Conference on e-Learning, e-Management and e-Services (IC3e), Langkawi, Malaysia, 2016.
- [34] Quipper, "Quipper.com," Quipper, 20 September 2018. [Online]. Available: <https://www.quipper.com/id/about/>. [Accessed 22 2018].
- [35] J. P. Spradley, *The Ethnographic Interview*, Orlando, Florida: Harcourt Brace Jovanovich College Publishers, 1979.
- [36] F. Nietzsche, *Beyond Good and Evil*, New York: Cambridge University Press, 2002.
- [37] R. Goldblatt, "Matemahical Modal Logic: A View of its Evolution," *Journal of Applied Logic*, vol. 1, no. 5-6, pp. 309-392, 2003.
- [38] Donald T. Campbell & Julian Stanley, *Experimental and Quasi-Experimental Designs for Research*, California: Wadsworth Publishing, 1963.
- [39] Rose, D. H., Gravel, J. W., & Gordon, D. T., *Universal design for learning*, New Jersey: The SAGE Handbook of Special Education: Two Volume Set, 2013.
- [40] Zendi Asma & Bouhadada Tahar, "Hybrid approach for modeling units of learning: Using a prototype learning design model and IMS learning design standard," in International Conference on Education and e-Learning Innovations, Sousse, Tunisia, 2012.
- [41] Nicole C. Miller, Bethany R. McKissick, Jessica T. Ivy & Kelly Moser, "Supporting Diverse Young Adolescents: Cooperative Grouping in Inclusive Middle-level Settings," *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, vol. 90, no. 3, pp. 86-92, 2017.
- [42] Dwi Sulisworo & I Wayan Santyasa, "Maximize the mobile learning interaction through project-based learning activities," *Educational Research and Reviews*, vol. 13, no. 5, pp. 144-149, 2018.
- [43] Sullivan, Mastropieri, & Scruggs, "Reasoning and remembering: Coaching students with learning disabilities to think," *The Journal of Special Education*, vol. 29, no. 3, pp. 310-322, 1995.
- [44] Anna Therese Steen-Utheim & Njål Foldnes, "The flipped classroom and cooperative learning: Evidence from a randomised experiment," *Teaching in Higher Education*, vol. 17, no. 1, pp. 1-18, 2017.
- [45] M. J. Capp, "The effectiveness of universal design for learning: a meta-analysis of literature between 2013 and 2016," *International Journal of Inclusive Education*, vol. 21, no. 8, pp. 791-807, 2017.
- [46] Einar M. Skaalvik, Roger A. FedericiAllan Wigfield, & Truls N. Tangen, "Students' perceptions of mathematics classroom goal structures: implications for perceived task values and study behavior," *Social Psychology of Education*, vol. 20, no. 3, pp. 543-563, 2017.
- [47] Nicole C. Miller, Bethany R. McKissick, Jessica T. Ivy & Kelly Moser, "Supporting Diverse Young Adolescents: Cooperative Grouping in Inclusive Middle-level Settings," *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, vol. 90, no. 3, pp. 86-92, 2017.
- [48] Kieron Sheehy, Budiyanto, Helen Kaye, & Khofidotur Rofiah, "Indonesian teachers' epistemological beliefs and inclusive education," *(JOID) Journal of Intellectual Disabilities*, vol. 20, no. 10, pp. 1-18, 2017.
- [49] K. Karp, "Weaving lessons: Strategies for teaching mathematics and science in inclusive settings," in *Inclusive Education: A Casebook and Readings for Prospective and Practicing Teachers*, London, Routledge, 2008, pp. 29-47.
- [50] Nina Bonderup Dohn, Julie-Ann SimeSue Cranmer, Thomas RybergMaarten de Laat, "Reflections and Challenges in Networked Learning," in *Networked Learning*, Springer, 2018, pp. 187-212.
- [51] E. Baran, "Professional Development for Online and Mobile Learning: Promoting Teachers' Pedagogical Inquiry," in *Second Handbook of Information Technology in Primary and Secondary Education*, Springer, 2018, pp. 463-478.