Hybrid Learning Development to Improve Teacher Learning Management

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Abstract

Teacher learning management is an important part of achieving the process and results within the scope of education. In addition, the development towards technology optimization is called era 4.0 as globalization which is part of the sustainability of innovation in 21st Century Education. Therefore this study aims to develop and investigate hybrid learning methods for teacher learning management. This research and development has passed the feasibility validity test with a score of 78.5 in the good category by media experts and 105.5 in the excellent category by material experts. This study involved 41 of them 9 teachers and 32 students at the Community Learning Center (PKBM Package-C) in Ciamis District. The outcame showed a positive response to teacher learning management with a score of 91 in the Very good category. The result show that the effect by hybrid learning has had an impact interactive environment and can learn to be independent (for upgrade them skill) including interaction with teacher or peers. Limitation and future research are discussed.

INTRODUCTION

In the 21st century, digitalization has been included in every line of life and has even become a part of today's fast and practical necessities of life. No exception in the world of education that demands technology as a medium that can simplify and assist the learning process to the maximum. Technological advancements have changed many methods of education from their origin (Freitas & Liarokapis, 2011).

Technology is one of the prerequisites in the context of 21st century education. Through meaningful and directed use of media and technology, as well as the important role of technology in education that gives meaning to each individual. (Smaldino, Lowther, Mims & Russell, 2015) The development of technology has a significant impact on the process of information exchange, including in the field of education. Current education must be able to describe better meaning for students as students and teachers as educators. This is inversely proportional to the education situation which has not been able to become an effective facilitator of the learning process. If we observe carefully the process of learning a person now is very thick with the help of technology, especially the ease of internet access which is part of the information source that is so comprehensive. As revealed by Smaldino (2015). online media sources provide different ways for students to access information, share their thoughts and interpretations. On the other hand, teacher difficulties (adaptation) into a number of negative response

notes that often arise, but the response can be overcome through training in preparing and operating the technology device (Soepriyanto, Sihkabuden and Surahman 2018). So, this is very relevant to the 4C concept (Communication, Critical Thinking, Collaboration and Creativity) which was initiated in character education in Indonesia today.

Along with the development of trends and needs of information and communication technology in the world of education 4.0 today, of course there have been many innovations and inventions in the form of multimedia devices and ideas and methods in an effort to optimize technological devices into the world of education today. And one of them is the Hybrid learning approach. Mixed Learning or better known as Hybrid Learning is a learning method that combines two or more methods and approaches in learning to achieve the objectives of the learning process. According to Thorne (2003) that what happens in conventional classes where educators and learners meet in person, with online learning that can be accessed anytime and anywhere. A website that is increasingly current so that it becomes a media sharing information (Surjono, 2014) The statement makes the effectiveness of cloud devices that are always developing. Like the idea of Hybrid Learning which provides innovation in the form of virtual meetings between educators and students. Where they allow to be in a different world, but can give each other feedback and interact with each other between students and educators. However, without eliminating conventional meetings in total.

The development of technology has a significant impact on the process of information exchange, including in the field of education (Hediansah & Surjono, 2019). Current education must be able to describe better meaning for students as students and teachers as educators. This is inversely proportional to the education situation which has not been able to become an effective facilitator of the learning process. In a dynamic way in the social, personal and personal life, with a background that supports the things that will be needed and in the 21st century it becomes important because of changes in the global (Chalkiadaki, 2018). Some Homeschooling-based Education to the community has now tried online learning innovations, this is no exception, chasing package C. But of course there is concern that total learning is only through distance in the network (e-learning). For various reasons because there are some things that are not enough to be done only in the context of e-learning. Then Hybrid learning is one solution to neutralize online learning.

Everyone can continue to learn without having to sit as a student in an educational institution (Surahman, 2019). that means education must be able to provide flexibility and efficiency to realize it. As in equality education is education that takes place outside the school system, but the competence of its graduates is considered to be equivalent to the competence of formal education graduates after testing by an institution that has the authority designated by the government in accordance with the law. Nevertheless equality education seems marginalized from public attention because the form of its implementation in the community is not very popular. "...Even though equality education contributes significantly in contributing to gross enrolment rates (APK) and pure participation rates (APM) education, both Package A is equivalent to elementary school, Package B is equivalent to junior high school, and Package C is equivalent to senior high school (Suryadi, 2006).

Gagne & Briggs (1979) stated that instruction is the means employed by teachers, designers of materials, curriculum specialists, and others whose purpose it is to develop an organized plan to promote learning. What is said by Gagne means that the scope of learning is in the form of instructional materials, curriculum design and for example is the task and authority of the teacher intended to build the ideal learning and learning process. The above context also explains that the process of disseminating knowledge is through good planning, giving and processing. Instructional (learning) is a stage used by educators to direct students in certain conceptual conditions to help them achieve learning targets that have been determined or are more familiar with the term curriculum achievement (Nitko & Brookhart, 2011). From this opinion indicates that in learning activities the teacher must make a condition that is

able to help students achieve the learning target. So that through this learning special conditions are designed that will be used to facilitate students to achieve their learning goals.

The new curriculum is currently adapted to follow the needs of globalization that have been formulated and determined by the Ministry of Education and Culture of the Republic of Indonesia as a reference as well as the foundation of education and learning that is applied to be able to adapt in the era of Industry 4.0 facing the world today. As Wahyudin explained (2013) the three concepts used in the current curriculum in the 21st century skills are (Trilling dan Fadel, 2009), scientific approach (Dyer, 2009) and authentic assessment (Wiggins dan McTighe, 2011). Then from the three concepts of the approach it is certainly important to be implemented in core subjects, especially in senior secondary education. Like, the concentration of Natural Sciences with map physics is the main part of the study that cannot be separated from the complicated stigma because it relates to the formulas and calculations attached to it.

IEA (International Association for the Evaluation of Educational Achievement) has long held scientific studies related to the cognitive study of students through initiation TIMSS (Trends in mathematics and Science Study). The average score obtained by Indonesia is still below the point standard set by TIMSS, which is 397 out of 500 average scores (Martin, Mullis, Foy & Hooper, 2015). This states that the achievements of Indonesian mathematics and science are still low on a global scale or between countries. The measurement aspects used by TIMSS include aspects of understanding, reasoning and application. Of the three aspects, aspects of understanding and application are included in basic thinking skills (Rofiah, 2013).

In physics learning, educators must create pleasant things to give rise to the enormous desire of students to learn them. In order to teach physics as it should be, the process of learning physics in schools must also be in accordance with the characteristics of physics itself. According to Mundilarto (2013) physics has characteristics that include building knowledge consisting of concepts, principles, facts, theories and postulates as well as scientific methodologies. Related to the theory of physics which is generally a scientific study of natural events in life makes it easy for students to construct themselves according to the understanding and reason they see and have experienced, which happened before they understood the scientific theory of the experts causing misconception towards science.

The world of education, especially teachers as teaching staff who are directly involved certainly need learning strategies to the right learning technology media for the efficiency and effectiveness of learning done (Chaeruman 2010). The presence of multimedia technology is now no longer a luxury item. The media element in learning has a role especially in the delivery process, where several things related to the delivery are 1). Learning media as supporting elements; 2). Learning interactions with the media; and, 3). Forms of learning structures used (Degeng, 2013). According to Seels and Richey (1994). Instructional Technology (TP) has five foundations in the field of cultivation which include: Design, Development, Utilization, Management, Evaluation. In line with the statement of Miarso (2011) the instructional technology area includes design, development, utilization, management, evaluation and research. If the field of work wants to produce technological learning resources and is appropriate for facilitating learning and improving the performance of learners, each region must be synchronized with other regions and fields of work in an integrated manner.

Surjono (2013) suggests that e-learning systems can be applied in the form of asynchronous, pertinent and one-time synchronous, or a mixture of the two. This learning model has several advantages in optimizing learning technology such as computer media, smartphones and others. Related to this, it is certainly necessary to affirm the form of special material related to the study of students by providing comprehensive material explanations and examples that are relevant and easily understood by students as a catalysator, process helper, resources linker, and solution giver. 21st century human connectivity with technology has become a demand for life in today's modern and fast-paced era (Hediansah dan Surjono 2019) This is a serious discussion of world education practitioners especially those in charge of

Physics to provide many breakthroughs and innovations so that the negative stigma of students towards Physics can be overcome and transformed. The requirement can be overcome through the optimization of interactive technology media through Hybrid Learning learning as a means of contemporary learning innovation.

METHOD

This research is more oriented to research and development or Research and Development (RnD), namely research that aims to develop an appropriate product. Products developed with the media and learning methods that synergize with today's technology but without eliminating the conventional approach to learning as a whole, called Hybrid Learning. Products developed in the form of web learning with the implementation of Hybrid Learning learning methods to be applied as learning innovations in one of the Physics subjects in one of the PKBM in package C/ high school equivalent.

While the model used in this study uses a learning development model initiated by Allesi & Trollip. The Alessi and Trollip development model was chosen because it has strong relevance to the products that will be developed in this research and development. In addition, the stages of the development process are products that are considered effective and efficient. In general, it contains three main processes, namely planning, design, and development, along with 3 complementary attributes, namely standard, on going evaluation and project management, some of the topics in this model also include the strategy of developing online learning, so that can be used as a guide and platform for researchers in the process of developing Hybrid Learning.

Development of e-learning based learning patterns combined with direct face-to-face learning with a combination of percentages of each 70% session online with 30% offline/direct face-to-face in the form of archetypal modelling or prototype 1. This concept is adapted from 21st century learning innovation which combines conventional learning (face to face) and distance learning (online learning) which can be combined according to needs both simultaneously and separately, So that learning methods can give each other positive values and erode some of the problems that each learning method has from both online and offline. Physics material to be developed namely Newton's Law for level 5 or equivalent in class X on Semester II Package in PKBM Bina Pandu Mandiri. The implementation of the hybrid learning model is done by making a basic pattern in the form of structured learning stages and the application of mixed learning concepts. Modelling of Hybrid Learning model patterns is shown in figure 2. The principles of the design of hybrid learning are implemented according to the concepts and rules of learning design that are tailored to the needs of the relevant school / institution. The research subjects were conducted at the level of senior high school PKBM Bina Pandu Mandiri with a sample population of 27 people, including 9 participating tutor for building management hybrid learning.
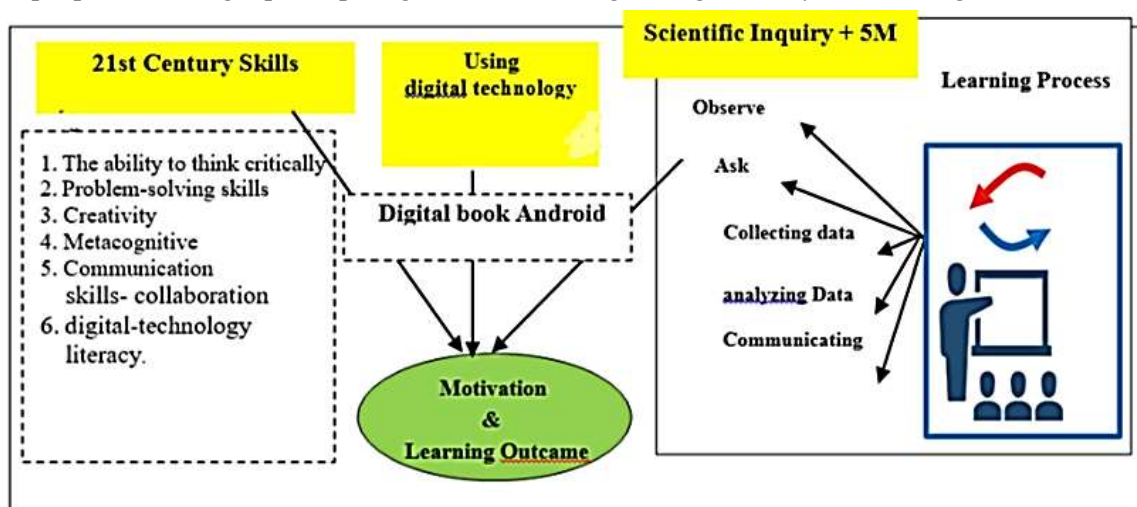

Figure 1. Research Design of the Relationship Between Of Research Variable.

RESULTS

The results of product development in this study are in the form of learning web combined with Student Worksheets where both are integrated to complement each other between conventional learning and distance learning in the form of online learning to be implemented in learning Physics which in this research development focuses on one sub teaching material Newton's Law. The procedure for media development has been taken based on the development stages of Alessi & Trollip (2001).

Figure 2. Grand Concept of Hybrid Learning

The results of this activity are the realization of the development of online learning media (web learning) and the preparation of teaching media that can be printed out into LKPD, then obtained results from the preparation of instruments validity, practicality and effectiveness of Hybrid Learning media. The concept in storytelling is poured out and realized in this stage so that it becomes a product that has a structured development value. The stages of online learning development involve Moodle LMS and Bootstrap Tools on specific sections of the page that are tailored to complement the needs of each learning page. As for the production process, it is carried out on going evaluation, which is a periodic evaluation with developers and mentors to produce the ideal product.
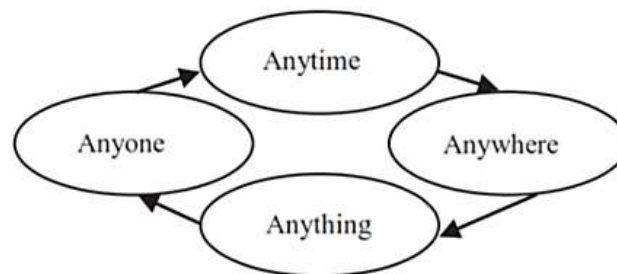

Figure 3. The Advantage of Hybrid Learning

The stages of presentation of segments trace the sources and references that have been reviewed at the design stage. The arrangement of this segment is applied to the instructional materials made both in the LKPD and for posting in the Learning Web with additional multimedia relevant to the discussion so as to provide a different learning sensation and be more interesting and fun. The second result of this stage is the formation of components multimedia components that are relevant to teaching materials in the form of text, images, audio and video. This element is an asset in the product developed. Each element synergizes with one another for the implementation of synergistic mixed learning namely Hybrid Learning. Images and videos are made relating to the learning of Newton's law physics about motion and HK 1, 2 and 3 Newton.

This concept is adapted from 21st century learning innovation which combines conventional learning (face to face) and distance learning (online learning) which can be combined according to needs both simultaneously and separately. So that the learning method can give each other positive values and erode some of the problems that each of the learning methods has both online and offline.

Figure 4. web learning interface

The result of this alpha examiner is measuring the level of validation obtained from the product produced through the assessment of experts in their field. This test is to find out the overall research both in terms of material and media developed. So that researchers are able to analyse deficiencies and parts that have not been in accordance with the ideal criteria and are suitable for later follow up by researchers.

Table 1. Results of material expert scoring

No	Aspect	Score Maximum	Score	
			Expert 1	Expert 4
1	Suitability of learning objectives	25	20	23
2	Language and writing	35	35	35
3	Dish	25	20	24
4	Integrity	15	13	15
5	Fill in the material	15	13	13
Total Score			**101**	**110**
Average			**105,5**	
Category			**Very good**	

Based on the table above, it can be seen that the average assessment results obtained from the two media experts reached "105.5" which is in the vulnerable category "very good" that is with the vulnerable index "X > 100,8".

Table 2. Results of media expert scoring

No	Aspect	Score Maximum	Score	
			Expert 2	Expert 3
1	Display and Readability	10	10	9
2	Integrity	25	23	23
3	Quality system	20	18	19
4	Quality of content	15	13	12
5	Delivery system	15	15	15
Total Score			**79**	**78**
Average			**78,5**	
Category			**Good**	

Based on the table above, it can be seen that the average assessment results obtained from the two media experts reached "78.5" which are in the vulnerable category "Good" which is vulnerable to the index "X > 71,34".

Table 3. Scoring results of Teacher Practicality for Hybrid Learning

No	Aspect	Score Maximum	Score	
			Tutor 1	Tutor 2
1	Material feasibility and accuracy	35	32	30
2	Display quality	15	15	14
3	Easy operation	10	6	9
4	Linguistics	10	10	9
5	Learning using multimedia	30	29	28
Total Score			**92**	**90**
Average			**91**	
Category			**Very good**	

The results of the acquisition of the beta test level were then addressed to two teachers as an assessment of the practicality of Hybrid Learning and an average score of 91. Where the results of the scores were processed in the conversion of scores (Table 1), the category "very good" was found to be vulnerable conversion on index X > 83,94.

DISCUSSION

The development of Hybrid Learning of Physics in this study was completed through the stages of RnD namely planning, design, and development. These stages are carried out with the aim of obtaining quality learning media. According to Nieveen (1999), quality development products must meet the validity criteria, practicality, and effectiveness. Therefore, based on the results of the alpha test, beta test, and evaluation at the stage of development (development), it is known that learning media as a product of development in this study has met the criteria of valid, practical, and effective in terms of teacher learning management. Prayitno (2015) in his blended learning research explained that it needed some careful preparation to carry out learning well, from facilities, access to trained human resources. So, this becomes the focus of the study of the writer to develop better in order to achieve the expected goals. In addition, the benefits obtained include effectiveness in the flexible and efficiency domain through optimizing the use of technology with several accompanying benefits.

Important content in the development of blended learning that will be used as a good learning reference so that it is expected that in the future it will have a good impact on the learning process and outcomes as intended (Boelens Voet & Wever, 2018). Good learning design must be able to reach the diversity of students in learning so that the views of instructors and students have the goal of achieving optimal learning through hybrid learning. Some of the students are indicated to have brought some understanding of a natural concept that occurs in their daily lives which sometimes contradicts the scientific concepts described by experts and this can happen if a student's formal understanding is not conveyed properly or the process of transferring information is not received intact and thoroughly. Alexandra, Tatyana & Nadehza (2015) stated that from several studies state that if the Hybrid Learning model is applied to in the teaching and learning process to be effective with students' transition to levels who is higher in gaining knowledge and developing the skills. Related to this, it is certainly necessary to affirm the form of special attention relating to the understanding of the concepts of physics material studied by students by providing comprehensive material explanations and examples that are relevant and easily understood by students.

Boelens (2017) explained that the design of blended learning environments brings with it four key challenges: (1) incorporating flexibility, (2) stimulating interaction, (3) facilitating students' learning processes, and (4) fostering an affective learning climate. Research conducted that the blended learning program has the potential to improve learning outcomes and is said to be able to overcome the dropout rate. In building an effective classroom environment, teachers must be able to create a supportive

atmosphere in the classroom that can increase student interest and motivation in learning. (Adi & Fransisca, 2018). That is, the teacher must pay attention to several factors. Some of these factors are the physical environment, teaching style, and the teacher's role. Educators and students need to be given the latitude to teach and learn in these hybrid spaces while being protected and supported by schools. Ultimately, teachers and students bear an equal responsibility as they collaboratively learn and experiment in these evolving spaces (O'Byrne & Pytash 2015). This is not impossible because this is the era when the learning space outside the school building has been able to produce a variety of educational audio-visual products in which the media technology is able to provide interactive learning support tools such as quizzes, games and storytelling to deliver learning material. For example, if learning Natural Sciences or others will be more effective if the teacher occasionally uses multimedia technology devices to support learning.

For effective learning through discussions to occur in blended course designs, it seems to be necessary to maintain coherence between in class and online discussions (Han & Ellis, 2019). Hybrid Learning is one of the learning models that is able to make changes for teachers to innovate and be interactive so they can become teachers who progress in the demands of the world of education. The change starts from yourself, in order to be able to see and adapt to change, always focus on the goals to be achieved. In the application of Hybrid Learning Institutions or educators must be able to ensure that all participants have the basic ability in media use literacy and do not forget to monitor facilities and infrastructure, so that learning independently via online is not a lot of obstacles due to factors that are so serious. In addition, educators have prepared the best solutions to overcome problems that might arise.

CONCLUSSION

Hybrid learning produced in the form of learning webs that can be adjusted in offline and online learning practices. The resulting method proved to be worthy of being used in Hybrid Learning-based physics learning with an emphasis in terms of teacher learning management with the aim of creating innovative learning that is innovative, flexible and effective in welcoming technology-based learning in Education 4.0. Hybrid Learning's final product in this study only supports physics subjects in sub-subject discussion of Newton Law at level 5 or equivalent to class X high school and has been tested and implemented in learning at PKBM Bina Pandu Mandiri in Ciamis District. Furthermore, this research and development product will be recommended to be used as an innovative learning approach to be able to improve performance in teacher learning management.

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