THE UTILIZATION OF ARTIFICIAL INTELLIGENCE COMPONENTS IN TECHNOLOGY ERA'S LEARNING

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Abstract. This study was to analyze the importance of component utilization of Artificial Intelligence (AI) in learning. This study was acknowledged by the results of a survey to the secondary school education teachers in the Subject Teachers' Association (MGMP) for Citizenship Education field in Cimahi as many as 42 schools and 146 teachers through the Google Form application and 104 teachers responded according to the Krejcie and Morgan tables. The method used in this research was descriptive survey. Based on the survey results, the main findings in this survey were not very encouraging, because most teachers in the learning process were not always even inclined. They sometimes never used technological media, social networks, use current issues, and assigned learning material widely and in depth. Further research on teachers must be able to master technological assiatance in to make the Citizenship Education was more crucial and urgent for students. On the other hand, students must be able to utilize social media in the daily lives. The school should also provide internet access for the continuation of the learning process. Thus, the government must be able to provide internet access for schools in remote areas, so that technology-based learning is no longer a barrier for teachers and students.

Abstrak. Tujuan penelitian adalah menganalisis pentingnya pemanfaatan komponen *Artificial Intelligence* (AI) dalam pembelajaran. Penelitian ini dilatarbekangi oleh hasil survai kepada guru pendidikan menenagah di lingkungan Musyawarah Guru Mata Pelajaran (MGMP) bidang studi Pendidikan Kewarganegaraan (PKn) di Kota Cimahi sebanyak 42 sekolah dan 146 guru melalui aplikasi googleform dan direspon sebanyak 104 guru menurul tabel Krejcie dan Morgan cukup mewakili populasi. Metode yang digunakan dalam penelitian ini adalah survei deskriptif. Temuan survei sangat tidak menggembirakan, karena sebagian besar guru dalam proses pembelajaran tidak selalu bahkan kecenderungan kadang-kadang bahkan tidak pernah menggunakan alat bantu teknologi dalam pembelajaran, jejaring sosial dalam pembelajaran menggunakan isu kekinian dalam pembelajaran, dan kadang-kadang bahkan tidak pernah menugaskan materi pembelajaran secara luas dan mendalam. Banyak hasil penelitian yang mempunyai dampak positif kepada siswa dalam proses pembelajaran. Guru harus dapat menguasai alat bantu teknologi dalam pembelajaran jika ingin pembelajaran PKn bermakna bagi siswa dan siswa harus dapat memanfaatkan media sosial yang melekat pada kesehariannya. Sekolah menyediakan akses internet bagi keberlangsungan proses pembelajaran. Pemerintah harus dapat menyediakan akses internet bagi sekolah yang berada jauh di pedalaman sehingga pembelajaran berbasis teknologi tidak lagi jadi penghambat bagi guru dan siswa.

INTRODUCTION

Globalization era has placed information and communication technology developing rapidly and forced the education world to hold positive innovations for the advancement of education and schools. One of functions of education technology is that it can change conventional learning methods into non-conventional ones. The conventional learning system in school is increasingly believed to be a system that is no longer effective (Suryadi, 2007). In this case, Conková (2013) asserts that currently it is necessary to optimize the e-learning process.

The development of technology has increasingly advanced presently, especially in the field of education. Learning is no longer conducted in the classroom (interface learning). It can easily accessible by using internet access with no definite place and time.

The learning process will be easier if students can utilize this technology. In this condition, it has become one of the choices for teachers to get involved and collaborate together with technology. In this technological era, teachers need to think creatively by continuously learning and open themselves for development (Fathurrohman, 2019). The development of today's education has relied on the term "education 4.0"; an adaptation of the Industrial 4.0 era, where the role of Artificial Intelligence is important (Hendradi, et al., 2020).

In Artificial Intelligence, education sector is advancing in times (Suwarno, 2019). Students' learning motivation is in very high category in terms of their interest in learning, the encouragement and needs in learning as well as the existence of a conducive learning environment (Zabir, 2018). The following figure is about the use of technology in school by teachers.
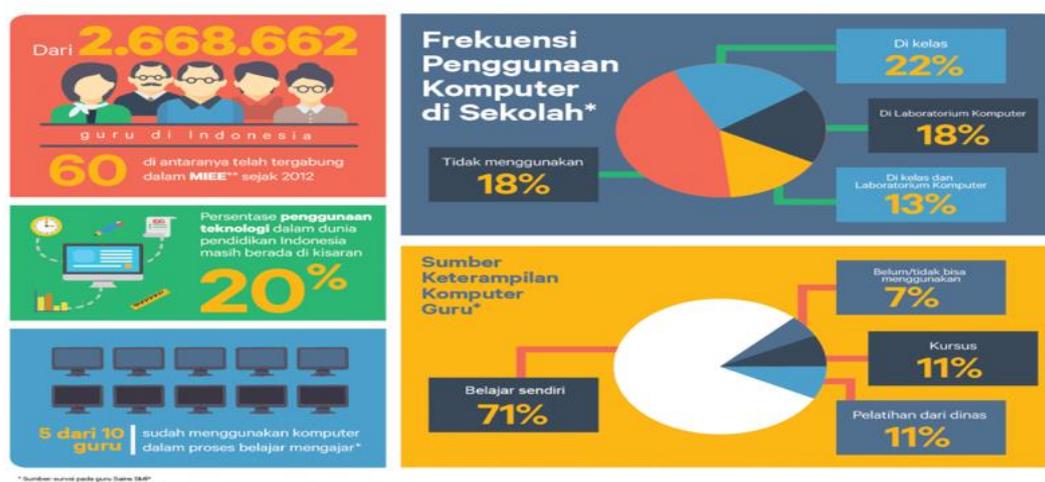

Figure 1. The use of technology in education field of the Indonesia (Source: Ruangguru, 2016).

Technology will continue to develop. On the contrary, when someone does not want to take an advantage of the existing technology, he will be left-behind and has a difficulty in accessing technology's matter. Technology is a matter that cannot be separated from human life, especially for teachers' life. There are many ways that can be carried out by a teacher to utilize technology in teaching and learning activities. However, technology has indeed been proven to facilitate teachers in the process of teaching

and it can make a more interesting learning for students.

The term AI (Artificial Intelligence) has now covered all conceptualizations of intelligent machines for its operational and social consequences. With the increased accuracy and sophistication of AI systems, the AI will be used in a variety of increasingly diverse sectors including finance, pharmaceuticals, energy, manufacturing, education, transportation, and public services (Perez, et al., 2017). Various components can

currently be used by teachers in learning to support learning success.

The Governor of Central Java, Ganjar Pranowo has revealed that the current generation is no longer interested in ordinary learning method. The technology is advanced, and that teachers can utilize social media (Ma'rup, 2019). One of good ways for teachers in learning is to try as many applications as possible and not only ease students in the teaching and learning process, but also to provide a space for teachers to creatively carry out their functions and duties as educators.

On the other hand, a teacher can explain the material through the iterative applications directly, because students can understand fun things through the use of applications that they can use directly (Silvia, 2015). It is social media that can enable them to communicate with one another in undefinite time and place. Hence, the social media has a big impact on our lives today.

By the urgency of social media for students, the evidence of the use of technology in Indonesia within the scope of education, has not been sufficiently significant (Ruangguru, 2016). The Head of the Center for Information and Communication Technology of Education and Culture (KAPUSTEKKOM) Ministry of Education and Culture, Gogot Suharwoto reported that only 40 percent of non-information and communication technology (ICT) that the teachers were ready with technology (Maharani, 2018).

Based on this description, the researchers were interested in conducting a survey about the use of technology in learning for secondary education in the Subject Teachers Association (MGMP) Pancasila and Citizenship Education (PPKn) in Cimahi, West Java. The researchers conducted a survey by using Google Form application spread through the WhatsApp group. The questionnaire in the Google Form contains some scales, namely "very often", "often", "sometimes", and "never". Therefore, this study purposed to obtain information regarding the intensity of teachers in using technology in learning.

METHODS

This study used descriptive survey research method. This method was carried out to measure certain social phenomena, then explained it descriptively and narratively. The survey method was one of methods that was widely used in social research. A research that used survey method was also called as survey research method. In term of surveys, information was collected from respondents by using questionnaires distributed directly or through intermediaries, such as telephone and other online media. According to Scheuren (2004), the word survey was often used to describe a method of gathering information from individual samples.

Additionally, a survey could be seen as a research strategy for which quantitative information was systematically collected from a relatively large sample drawn from a population. The population in this study was the teacher of Pancasila and Citizenshio Education (PPKn) in secondary education in Cimahi who participated in the Pancasila and Citizenship Education (PPKn) Subject Teachers Association (MGMP). The total number of teachers was 140 from 42 Junior High Schools. This involved identifying specific groups or categories of people and gathering information from them. Hence, the survey research could also use quantitative research strategies (such as using questionnaires with numerically ranked items), qualitative research strategies (such as using open-ended questions), and mixed methods, because this research model was often used to describe and explore human behavior, and that the surveys were often used in social and psychological searches (Singleton & Straits, 2009).

Survey research was defined as "*gathering information from individual samples through their responses to questions*" (Check & Schutt, 2012). Nonresponse is the inability to get data for all sample units on all questions (Leeuw & Dillman, 2008). This type of retrieval has allowed various methods to recruit participants, collect data, and used various instrument methods (Ponto, 2015).

The questionnaires that were made in a very minimalist form would only survey that

whether teachers used technology in learning or not. In addition to Google Form for collecting data, the researchers also used telephone, letter, and interface interview (Leeuw & Dillman, 2008). As for those who responded through the application, there were 104 teachers as these data could be used as representative to other. In this contect, the researchers used Krejcie and Morgan's sample tables (Singarimbun & Effendi, 2008). The total population of 140 teachers was in the sample range in the table totaling 103 respondents. Thus, the total sample of 103

teachers is quite representative of the population, because survey method sometimes had a challenge in long-standing prejudices against studies with low response rates; the new finding will answer and fill the gap of the previous relevant studies (Krosnick, 1999).

A survey or complete self-administered survey was a method of collecting primary data by giving questions to respondents. In the following table, there were a number of statements given to teachers to fill the form based on the habits in their teaching and learning.

Table 1. Statement Given to Teachers

No	Statement	Very Often	Often	Sometimes	Never
1.	I use technological media in learning				
2.	I communicate with students and colleagues by using social networks				
3.	I use contemporary issues as a part of my learning				
4.	In assignments to students, I give assignments regarding the learning material broadly and deeply				

RESULTS AND DISCUSSION

In this section, the research findings is presented based on the results survey. The results of the survey are presented in a summary and bar diagram below.

The intensity of the teacher in using technological media in learning has resulted some points, namely: 2.9% (very often), 26% (often), 55.8% (sometimes), and 15.4% (never). Based on the results of the survey, most teachers do not always use technological media in learning.

Saya menggunakan alat bantu teknologi dalam pembelajaran saya
104 tanggapan
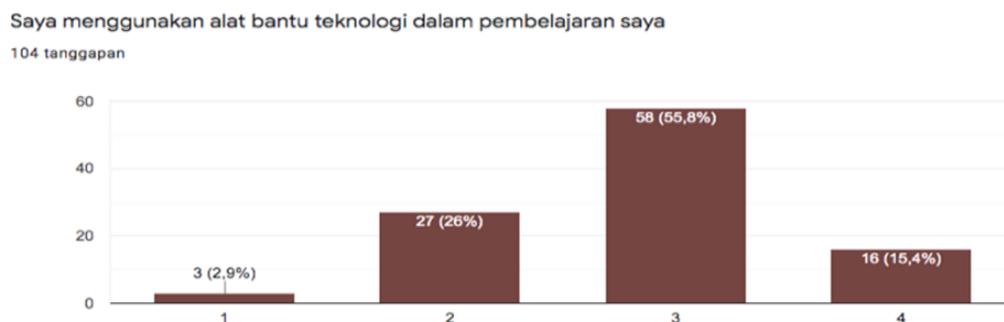
Figure 2. The use of technology in learning

The intensity of teachers in using social networking in learning was 4.6% (very often), 22.1% (often), 56% (sometimes), and
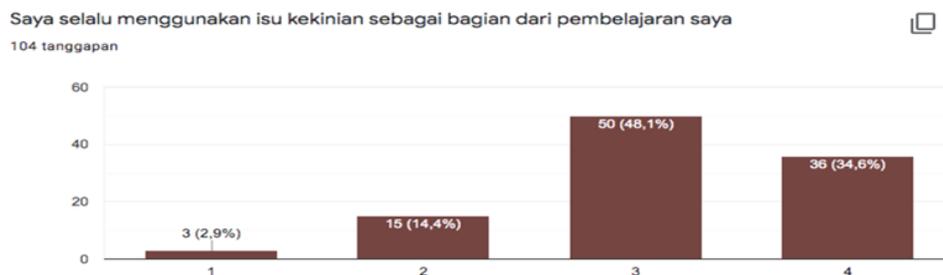
16.3% (never). Based on the results of the survey, most teachers do not always use social networking in learning.

Saya berkomunikasi dengan siswa dan rekan dengan menggunakan jejaring sosial
104 tanggapan

Figure 3. The use of technology in communication with students

The intensity of teachers in using current issues in learning was 2.9% (very often), 14.4% (often), 48.1% (sometimes), and 34.6% (never). Based on the results of the survey, most teachers do not always and never use current issues in learning.

Saya selalu menggunakan isu kekinian sebagai bagian dari pembelajaran saya
104 tanggapan

Figure 4. The use of contemporary issues in learning

The intensity of the teacher in assigning learning material broadly and deeply was 1.9% (very often), 14.4% (often), 64.4% (sometimes), and 19.2% (never). Based on the results of the survey, most teachers do not always assign learning material widely and in depth.

Dalam penugasan kepada siswa, saya selalu memberikan penugasan mengenai materi pembelajaran secara luas dan mendalam
104 tanggapan

Figure 5. The use of learning materials in assignments

Based on the previous findings, some points can be identified, namely:

1. In learning process, teachers do not always use technological media in the category of "sometimes" and "never".

2. In learning process, teachers do not always use social networks in the category of "sometimes" and "never".

3. In learning process, teachers sometimes never use current issues in learning.

4. Teachers in the learning process sometimes never assign learning material broadly and deeply.

Based on the above findings, teachers have a problem with the use of technology media, social networking, current issues, and assignment of learning material widely and deeply. Related to this point, there are 93 million of Indonesians are internet users and around 71 million have cellular phones. They tend to be connected with digital media. Some of them are young people who like to be

connected and communicate, and are fond of change. Most are the new generations who face a shift in old habits to a new tradition which still has difficulty to guess and ensure a future direction. The development of the digital world is so dynamic; it is gradually not only influencing, but also changing people's lifestyles (Usman, 2018).

The current era requires people to always learn and think of new ways to deal with life's problems. Life problems are increasingly complex and require us to think creatively and divergently in solving problems. In response to the rapid development of life or science and technology, Indonesia requires technocrat human resources (Kompasiana, 2019).

In facing the current digital era, it is a proper time to change the paradigm of learning process in the classroom into a process with full of experience, giving students the opportunity to collaborate with their teachers and their friends to build and organize knowledge, involving themselves in research, learning to write and analyze, and be able to communicate their experience to share together with their friends in the same ages (Trishandiani, 2018). Besides, it is also the time to rethink how teaching and learning method can be used and instilled in today's digital era. Therefore, creative learning is a method that can be developed in realizing the demands in the current digital era of education among other choices.

In this era of technology, teachers need to think creatively by progressively learn and open themselves to development. Moreover, teachers must be able to play their proper roles based on the context of times and technological advancement. Here, students can easily find information through internet access to complete their schoolwork (Usman, 2018). Thus, the use of technology in teaching and learning should become a concern for teachers.

Furthermore, social media has become a basic requirement for some people; the ones who embrace and enthusiast in utilizing technology. People, in average have adjust and adapt themselves in using social media. Yet, in essence, social media has only one function; that is to establish communication online (Hermawan, 2018), because social media is a medium for socializing with others and it allows human to interact globally. Thus, social media has removed human boundaries for socializing as well as space and time constraints (Nimda, 2012).

Additionally, people can learn to use a variety of ways and various sources in the present time. It is a challenge for teachers to find approaches that will be applied in helping students to learn effectively. Teachers, in the digital age, need to understand about the way their students learn and find the best among various choices. It means that as long as teachers do not understand how the abilities, needs and strengths of each student in learning something, it will be difficult for teachers to determine learning and teaching method, whereas it will give a positive impact for their students. Artificial Intelligent (AI) components can be utilized by the teacher in learning. Here is the simple viewpoint of AI's system (Kresnanto, 2018).
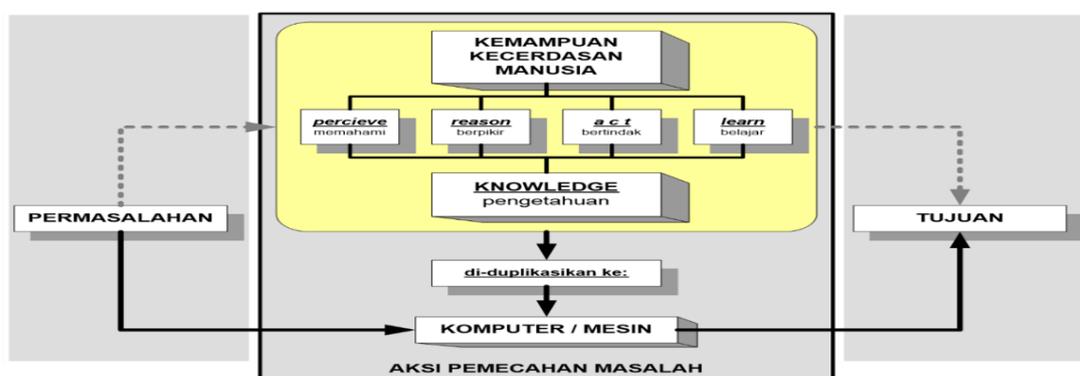.

Figure 6. Simple view of Artificial Intelligent (AI) systems (Source:Kresnanto, 2018)

Based on the figure above, Krisnanto argues that almost all problems are solved by the help of computers. The problem is increasingly complex, no longer overcome manually, no more device limitations, and human desires, and that the computers act like human. AI is one of the sciences in computer science that discusses how computers can do as well as human (Martiana, Badriyah, & Sigit, 2005).

According to pioneer of Artificial Intelligence, John McCarthy that AI is "The science and technique of making intelligent machines, especially intelligent computer programs". Additionally, artificial intelligence is a way to make computers, computer-controlled robots, or software with intelligence of thinking as smart human thinks (Madhapur, 2015). There are many terms are related to AI, such as deep learning, learning machine, image recognition, natural language processing, cognitive computing (to recognize something), amplification of intelligence, cognitive enhancement, increased machine intelligence, and increased intelligence itself (Bini, 2018). However, artificial intelligence application or program can be written in all computer languages (Dahria, 2008). The benefits of applying technology in the form of computers in the classroom has operationally enabled the activities of teachers and students during the learning process with some following activties.

Table 2. Table of student and teacher activity

No	Teacher's Role	Student's Role
1.	Design and develop learning content in the form of computers	Study independently
2.	Give individual guidance for every student as necessary	Discuss topics/issues that are felt unclear by the teacher
3.	Facilitate teaching and learning activities and always update teaching materials	Assessing learning progress (self evaluation)

The Figure 7 below explains the benefits of teachers in using technology during learning process (Wena, 2016).

Figure 7. The use of technology when teaching (Source: Ruangguru, 2016)

The use of technology in teaching process has raised advantages and disadvantages. The advantages of using technology by teachers, namely helping students to easily understand lessons, students are more interested in learning, teaching in indefinite time and place, simplifying the administration system in educational institution, and allowing collaboration among teachers. Meanwhile, the disadvantages can resemble the possibility of violating Intellectual Property Rights (HAKI) on teachers' work, the length of time to prepare learning materials, students are easily distracted, and the possibility of technology misuse.

Educational technology and learning technology (Instructional Technology) are often associated with discussion on the use of media as a core device for learning. In the case of media, the media is actually only part of the components of educational technology and learning technology. Both educational technology and learning technology have emphasized efforts to help human learning process by optimally utilizing learning resources through development and management function. Therefore, the meaning of the concepts of educational technology and instructional technology is more extensive than just the use of media as a core device for education and learning (Gafur, 2001).

Referring to some benefits obtained from the use of technology, the use of computer is believed to increase students' learning outcomes and motivation. Improving student learning outcomes and motivation directly is an indicator of the effectiveness and efficiency of learning implementation. Therefore, the development of technology-based learning is very important and must be done by teachers.

The mastery of ICT (Information and Communication Technology) will help teachers to be more creative and innovative in solving problems, working together, finding information, and communicating any idea. Besides, the limitations of ICT can also cause the teaching staff to face a number of challenges in the future, such as the unpreparedness to apply learning approaches and assessment methods that are too difficult.

Technology integrated in the teaching and learning process is as an effective and efficient media. As a learning medium, technology (especially ICT), is associated with various activities used to access, collect, manipulate, and present (communicate) information. The intended technology includes equipment (such as computer, laptop, and other devices), software applications and networks (such as internet, Wi-Fi, local network infrastructure and teleconverence).

The use of technology as a learning medium will obviously make the teaching and learning process effective and efficient, because it can facilitate a teacher in obtaining or conveying information (messages or content, material) of lessons, help to increase students' understanding, presentation of data/information in more interesting or reliable, facilitate the interpretation of data, and get information. Therefore, technology as a medium is an important role as an effective and efficient tool in the teaching and learning process (Kalimah, 2017).

Theoretically, the integration of technology in actual learning should allow the following learning processes, namely: (1) *Active*, students can be actively involved in the meaningful and itresting learning process; (2) *Constructive*, students can incorporate new ideas into previously knowledge; (3) *Collaborative*, students in a group can work together, share ideas, suggestions or experiences, advise, and provide input for the group; (4) *Enthusiastic*, students enthusiastically strive to achieve the desired goals; (5) *Dialogical*, social and dialogical processes occur, because students will benefit from the communication process in both inside/outside of school; (6) *Contextual*, meaningful learning processes (real-world) through Problem-based Learning approaches; (7) *Reflective*, students can realize what they have learned and reflect on what they have learned as part of the learning process; (8) *Multisensory*, learning can be delivered for various learning modalities, such as audio, visual and kinesthetic; (9) *High Order Thinking Skill (HOTS) training*, training on high-level thinking skills includes problem solving, decision making, and improve the ICT and media literacy (Halimah, 2008).

Educational technology experts argue that the main role of educational technology is to help improve overall efficiency in the teaching and learning process. The application of educational technology in education should make the educational process and teaching and learning process be more efficient, more effective and provide positive value (Asmani, 2011). On the other hand, the utilization of AI in Civics Education learning is to encourage the readiness of human resources in the global era through education in school, so that integrating ICT into the learning process needs to be done. The use of appropriate

learning media in Civics Education learning can be done by such using ICT media such as LCD in delivering subject matter to students. The Interactive multimedia is feasible to be used as a learning medium in teaching and learning activities in schools (Azmi, Astawa & Prantiasih). Learning media are all things that can be used to channel messages from the sender of the message to the recipient to stimulate thoughts, feelings, concerns and interests and the will of the students in such a way that the learning process occurs to achieve the learning objectives effectively (Sukirman, 2012). The role of computers in the learning process, especially in the 21st century, has shifted the role of computers from teachers' teaching tools to students' learning tools as well as the integration of computers with various methods and learning systems (Gafur, 2001).

Because citizenship education promotes interdisciplinary and contextual learning, it must be integrated throughout the curriculum. Media literacy helps students understand the videos, stories and news clips that have become their habits. Citizenship is an integral part of life in a democratic society (EDC, 2018). The early research has shown that civic media literacy education can be significantly beneficial (Hodgin, 2018).

Learning media have a very important role in the teaching and learning process, including in Citizenship Education learning, because Citizenship Education learning is based on thinking power (memory) and it is possible to develop students' character based on the cultural values of the Indonesian. Therefore, it is necessary to develop an attractive learning media to motivate students' learning interest in Citizenship Education subject to achieve the desired learning objectives. The teacher as a professional educator must be able to act as a communicator and facilitator for students in their class, and they are supposed to make the learning process more interesting. The media developed is effective in improving the learning outcomes of citizenship education in elementary schools (Rachmadtullah, Nadiroh, & Sumantri, 2018), because it cannot be denied that in globalization era, every student is required to be able to use the existing technological devices to be ones who have literacy on technology. Students are expected to be able to use Information and Communication Technology tools to find, explore, analyze, and exchange information efficiently and effectively. Information and Communication Technology (ICT) precisely and optimally include the current and future implications

The ICT nedia facilities that are used to support Citizenship Education learning include e-learning, *edmodo*, *in-focus*, internet applications and hotspot areas, and online test system (UJON). The process of utilizing ICT media in Citizenship Education learning includes some activities, namely: preparing the learning process and media, the implementation of Citizenship Education learning which takes place in the classroom by using ICT media, and evaluation through the ICT-based assessment process through the online system (UJON). Students' Citizenship Competencies after utilizing ICT media in Civics Learning can include some aspects, namely civic disposition, civic knowledge, and civic skills. This finding addresses and provides any recommendation that the use of ICT media plays a role in fostering the character of PKn (Citizenship Education) students. Therefore, the use of ICT media must be developed in order to be able to shape the character of PKn (Citizenship Education) students better in forming a better national personality (Latifah, 2013).

The utilization of communication and information technology in learning Citizenship Education in SMKN 2 Luwu Utara is quite well proven by the availability of communication and information technology facilities that are sufficient to support and support the learning process of Citizenship Education. The use of Information and Communication Technology (ICT) generally involves software and hardware that are sufficiently utilized sufficiently in optimal. Teachers are required to create learning media to develop skills by attending workshop, (Technical Course) BIMTEK, and seminars related to Information and Communication Technology (ICT), so that students easily understand teaching material (Hasrah, 2019).

The results have shown several points, namely: (1) the use of ICT-based learning media in Citizenship Education learning in SMP Negeri 5 Semarang was underutilized. In this case, teachers are also less able to operate ICT-based media. The impact of the use of learning media on students can increase learning motivation and stimulation of learning and learning activities becomes more enjoyable; and (2) the obstacles in the use of ICT-based media are teacher competence and media conditions. The ability of teachers in utilizing ICT media is still lacking, because Citizenship Education teachers in SMP Negeri 5 Semarang have never participated in ICT training to search for information and knowledge about the Information and Communication Technology (ICT) media that are developing at this time.

The use of instructional media at the learning orientation stage will greatly assist the effectiveness of the learning process and the delivery of messages and lesson content at the time. In addition to arousing student motivation and interest, learning media can also help students to improve understanding, presenting the data in an interesting and reliable manner and facilitating concise interpretation of data and information (Susilo et al., 2019).

The results have shown that: (1) the developed blog media is suitable for Citizenship Education learning based on the validity of Citizenship Education's experts, media experts and students' assessments, their worthiness has reached a mean score of 3.99 (included in both categories) of a scale of 5; (2) the blog media developed is effective in improving Citizenship Education learning outcomes based on learning test results. In small group test, the pretest mean score was 47.7 and the post-test was 86.3 (exceeding the KKM), so that the increase in learning outcomes has reached 45.07%. In the field of the test, the pre-test average value was 52.6 and post-test was 89.3 (exceeding the KKM), so that the increase in learning outcomes has reached 41.09%. These results indicate that internet-based learning media (online) in the form of Blogs is effectively used in Citizenship Education learning (Pratiwi, 2013).

Teaching material that is compiled and gathered as a web-based learning media as one form of application of the e-learning system that is not only able to present more interestingly and up-to-date learning material, but also allow for interactive elements and feedback between teachers and students in learning, so that the method of teacher learning will be more varied and students will be more active in learning. Web-based learning is the development of the e-learning model. It means that the use of web as a learning medium is principally used as teaching material (Rusman, 2013).

Almost all students already have a smartphone or tablet as a gadget that is used daily. Unfortunately. This gadget is not able to be used by teachers properly. The internet is more widely used to access social media (Facebook, Twitter, Yahoo Messenger). The situation becomes ironic when students' interest in accessing the internet is high, but there is no learning media to support and direct students towards effective independent learning by utilizing the internet. The need for the preparation of web-based learning media that they can access through the internet in indefinite time and place. Through this learning media, it is expected that the use of the internet by students in learning will be maximized and qualified (Hanum, 2014).

Based on the findings, it is recommended for Citizenship Education teachers to understand the latest technology, utilizing the ICT media in learning, such as using *in-focus*, e learning, web-based learning, etc. There needs to facilitate students to do their assignments through internet, email, Facebook, etc. as well as uploading test questions on the computer and making power point presentation material. Therefore, teachers should often participate in the ICT training and required to find a guideline that contains information and knowledge about ICT-based learning media utilized in learning. Students are expected to be able to explore and practice individual potential abilities in Citizenship Education subjects. Thus, students are required to have the ability and competence in utilizing the ICT media.

CONCLUSION AND RECOMENDATION

The purpose of this study is to analyze the importance of using Artificial Intelligence (AI) components in learning. Based on the results of research on the Subject Teachers' Association (MGMP) in the field of Citizenship Education (PKn) in Cimahi has indicated the importance of using technological media in learning. It properly helps students understand learning, and the teaching is no longer conventionally given. Therefore, teachers are required to have high creativity in the technological era. Non-technology teachers are required to understand the latest technology and utilizing the ICT media in learning. Therefore, teachers should often take the ICT training, search for guidelines that contain information and knowledge about the ICT-based learning media. The utilization of ICT media plays a role in fostering the character of student Citizenship Education. Therefore, the use of ICT media in schools must be developed to shape the citizenship character of student as well as to shape the nation's personality better. Teachers and media experts are required to be interconnected, complementary and interdependent. Schools and the government are expected to work together to complete the facilities and infrastructure needed for the use of the ICT-based learning media in schools with difficult internet access and even in a remote area, so that teachers and students can really take advantage from online-based learning .

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