The role of technology in developing thematic learning evaluation tools at Junior High School

Wasul Nuri

Universitas Ahmad Dahlan

wasulnuri@gmail.com

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ABSTRAK

Rapid technological developments have had a significant impact on various aspects of education, including the development of thematic learning evaluation tools in junior high schools (SMP). This article explores how technology can be used to increase effectiveness and efficiency in thematic learning evaluation at the junior high school level. On the one hand, technology offers great opportunities such as automation of assessments, deeper data analysis, and increased interactivity and student engagement. However, on the other hand, the challenges faced include the availability of infrastructure, the readiness of teachers and students to adapt to technology, as well as issues of data privacy and security. This article provides a comprehensive overview of existing challenges and opportunities, as well as offers recommendations for optimal use of technology in evaluating thematic learning at the junior high school level. The development of the current technological era has helped many fields, especially education. One of those affected is the evaluation part of learning. Learning evaluation tools have emerged as a result of the integration of technology. This paper aims to reveal the potential and obstacles to developing thematic learning evaluation tools in the future. The method used in this research process is qualitative, library type. Data collection uses documentation techniques and data analysis using the Miles & Huberman method, namely: data reduction, data display, and conclusion. Data shows that there are several potentials and challenges using AI, VR, & AR technology in learning evaluation

1. INTRODUCTION

Learning evaluation is a systematic collection, analysis and interpretation of student learning processes and results. This activity is carried out so that the information can be converted into meaningful value to support decision making. The meaning of these values is very important for educators, because they serve as a guide to ensure the extent to which their teaching methods are effective in developing students' potential. Through evaluation, educators can monitor potential and challenges as well as solutions to change for the better (Magdalena, Oktavia, & Nurjamilah, 2021, p. 138). Evaluation is used at all levels and learning systems, one of which is thematic learning.

Evaluation of thematic learning is aimed at determining instructional effects, which include changes in students' knowledge, skills, attitudes and behavior and accompanying impacts (nurturant effects), which include social, emotional development and moral attitudes (Sulhan &

Khairi, 2019, p. 113–114). Evaluation in learning certainly develops along with advances in technology, which gives rise to a lot of innovation potential in it

Technological developments have brought innovation in the field of education, namely through the integration of education with the use of technology. This has resulted in many educational processes being carried out using technology. (Latip, Suparman, & Nadiroh, 2021, p. 1). In facing advances in information technology and transformation in the education sector, Indonesia is trying to face these challenges. One of them is updating the evaluation system which is expected to lead to improving the quality of learning (Haenilah & Surahman, 2016, pp. 1–2). Learning evaluation that integrates technology is thought to be able to make the assessment and evaluation/follow-up process more effective for students. The use of technology in the teaching and learning process is considered to make the activity more interesting and easier. The hope is that the use of this technology will be able to create a pleasant learning atmosphere and attract students' interest in the process of taking learning evaluations. (Namira, 2021, pp. 115–116).From the explanation above, this article attempts to reveal and describe the opportunities and challenges of technology as an innovation in implementing evaluation in learning. METHODS

The method applied in this research is qualitative, where this paper will describe and explore the challenges and opportunities of using technology in learning evaluation (Siyoto & Sodik, 2015, p. 14). The research carried out was library research, relying on written sources, journal articles as the main source of information (Nata, 2016, p. 173). The data collection technique applied is through documentation, where data in the form of notes and documents related to the research problem is taken (Samsu, 2021, p. 95). Data analysis uses the Miles and Huberman theoretical approach, which involves data reduction, data display, and conclusion. The process can be explained as follows:

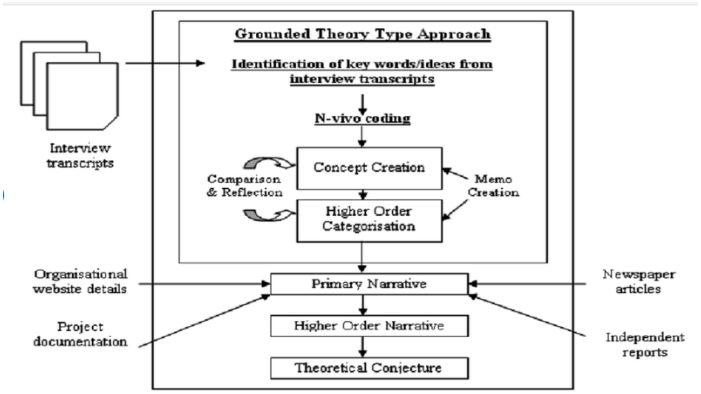

Figure 1. Qualitative research data analyst

2. RESULTS AND DISCUSSION

3.1.Various Learning Evaluation Tools

Tools can be interpreted as media that are used to help carry out something more effectively and efficiently (Cahyanti, 2018, p. p. 17). Besides that, educational evaluation can be interpreted as all processes relating to planning, implementation and decision making activities regarding the educational process (Enung Nugraha, 2009, p. p. 239). Based on the opinion above, it can be concluded that an evaluation tool is a medium or technique used by an evaluator to facilitate the implementation and achievement of evaluation objectives more effectively and efficiently.

There are two kinds of techniques in learning evaluation, namely: first, Non-Test Technique is an evaluation technique that is carried out without testing students. This technique can be done in several ways, such as observing students systematically, analyzing documents, and by conducting interviews (Asrul, Saragih, & Mukhtar, 2022). The following are several types of non-test evaluation tools according to Enung Nugraha that can be used in learning evaluation: Observation or observation. Observation can be used to assess and measure student learning outcomes, such as observing student discussion activities, student behavior, observing student skills in using teaching aids. , etc

Interviews are a question and answer technique to get answers from respondents. Interviews can be conducted in two ways, namely free interviews and guided interviews. The two have slight differences, the difference lies in the respondent's opportunity to provide an argument. In free interviews, respondents are free to express arguments without being restricted. Meanwhile, in guided interviews, respondents can provide arguments according to the answers provided by the interviewer. A questionnaire is a set of questions or statements that must be filled in by respondents. The preparation of the questionnaire simply presents alternative answers or the answers are completely left to the respondent. Scale, this technique consists of several models including Ikless, Likert and Thurstone, Guttman, and Osgood. This describes a statement that can be quantified so that it becomes easier to measure quantitatively. Check List, A check list is a list containing items or things to be observed, which has the function of maintaining the consistency and completeness of things being observed or done. For example, a check list about students' activeness in discussion activities, a check list about study habits, attitudes, and so on. Case Study, A case study is in-depth research into an event that is currently occurring or has occurred. In educational evaluation, this case study can be used to study cases of student violations, children who cannot get along with friends, students' learning methods, and other cases. This case study was carried out over a certain period continuously with the aim of seeing its development.

Second Test Technique, From a usability perspective, this technique is categorized into three types, namely, diagnostic tests, summative tests and formative tests. Diagnostic tests are used to determine students' weaknesses so that appropriate treatment can be given. Summative tests are carried out after the end of a group of programs or a larger program. Formative tests are intended to determine the extent of student success after participating in a particular program. Meanwhile, according to its form, tests are divided into three, namely: Oral Tests Oral tests or what are called oral tests are tested by the examiner through the mouth which is answered by those being tested. This oral test can be carried out individually or in groups, both examiners and examinees. Written tests, in this case both questions and answers are given in writing, have two forms of tests, namely objective tests and essays. Objective tests are tests that are carried out objectively or there will be no influence of elements of subjectivity in their implementation. Some examples of objective tests are true-false and multiple choice tests. Meanwhile, the essay test is a subjective test. Often in a question, various interpretations arise from one student to another, while this interpretation is not necessarily what the examiner intended. Essay tests are divided into free descriptions, limited descriptions and structured descriptions. Action tests are a form of test that requires student answers in the form of behavior, actions, or deeds. This type of test is generally used to assess aspects of knowledge, skills, skills and understanding of the learning that has been delivered (Enung Nugraha, 2009).

3.2 The Role of Technology in Learning Evaluation

We can all agree that technological developments have influenced every aspect of human life, including in the realm of education. Many educational activities have utilized technological assistance to support the success of learning activities. This increasing use of technology is also influenced by the increasingly massive development of the internet (Fauzi, Fatoni, & Anindiati, 2020). In learning evaluation, for example, the use of technology and the internet is a profitable option because the evaluation process becomes more effective and efficient. Computer-based evaluations like this are expected to be able to provide accurate, fast and cost-effective evaluation results.

There are several applications that can be used in learning evaluation, which can be used for surveys, creating questionnaires, collecting information, and creating quizzes for students. One application that is often used in learning evaluation is Google forms and Quizizz. The existence of Google Form and Quizizz can make it easier for teachers to obtain student learning outcomes because in these applications teachers do not need to correct individual incorrect and correct parts (Wandini & Lubis, 2021). Apart from Google Form and Quizzizz, there are also several learning evaluation applications that are developing among educators, including Edmodo, Google Quiz, Hot Potatoes, Quiz Creator (Fauzi et al., 2020). Some of the applications above can be alternative learning evaluation media choices that are quite effective and efficient.

3.3 Technology Potential in Developing Evaluation Tools

3.1.1 Use of Virtual reality (VR) and Augmented reality (AR)

According to Bambang Niko Pasla, Virtual Reality (VR) refers to technology that uses computers to create an environment or world that is not real. VR provides an experience that resembles reality and allows users to interact with the environment. On the other hand, Augmented Reality (AR) is a technology that adds visual and audio information to the real world, displayed through devices such as smartphones, tablets or AR glasses. Thus, AR allows users to see the real world while receiving additional information provided by the computer. (Pasla, 2023). According to Andes Rizky (2022) at the Education Sector Digital Transformation Kick Off event, he said that "Virtual reality and Augmented reality combined with the concept of pedagogy will make technology not only a medium but also a stimulant. "Students become happier in learning and have a high curiosity,". (Rahmawati, 2022)

The criteria for smartphones that can support Virtual reality (VR) and Augmented reality (AR) experiences involve the presence of gyroscope and accelerometer sensors. These sensors are generally available on most smartphones today. Although VR technology is mostly known in the context of games, it actually has wider potential, such as in simulations, interactive learning, and product promotional activities. By realizing the great potential that VR technology has, online learning systems can utilize it to develop innovations that make online learning more interactive. (Ariatama, Adha, Rohman, Hartino, & Ulpa, 2021**)**

In general, VR and AR are only used as teaching media or teaching aids during the teaching process. However, in line with developments, the use of Virtual Reality (VR) and Augmented Reality (AR) can also be used in the evaluation process which can then actually take the learning experience to a higher level. Through VR, students can 'visit' places related to thematic material, having direct experiences, such as observing forest ecosystems or contemplating historical sites. AR, on the other hand, allows the insertion of additional information into the real world, for example, by displaying additional details about thematic objects when hovered over using a camera device. (Setyawan, Rufii, & Fatirul, 2019)

The use of VR and AR in thematic learning evaluation creates new opportunities to enrich student experiences, facilitate deeper understanding of concepts, and motivate active engagement in the thematic learning process. Continued research and development in this area will make a major contribution to the development of more contextual and student-oriented evaluation methods.

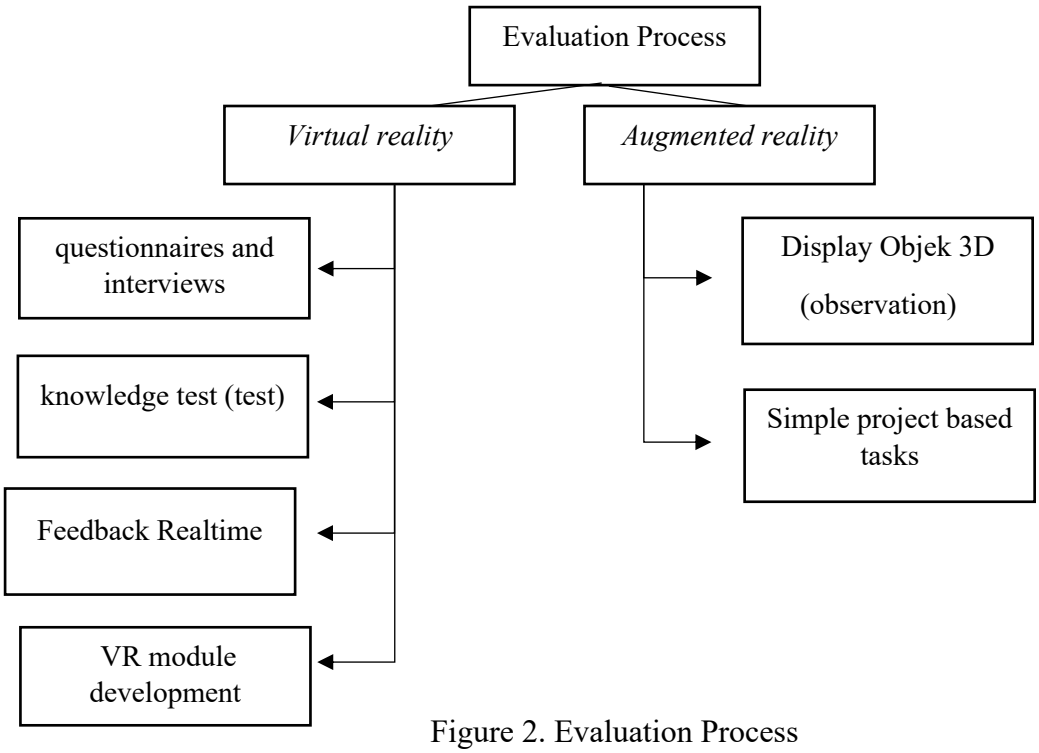

Figure 2. Evaluation Process

Based on the concept above, it can be seen that the use of VR and AR can open up potential and opportunities to open a new window for a phase of increasing the learning process that is more interesting and in-depth. VR and AR, which were initially just entertainment and game-based technologies, can now be used for various things, including the evaluation process in learning. VR has the potential to be used as an evaluation tool such as questionnaires, interviews (oral tests), knowledge tests (post tests), real-time feedback (attitude assessment), and development of VR modules. Meanwhile, AR has the potential to be used as an evaluation tool with direct observation and simple project-based tasks. (Feltham, 2023)

So, the evaluation tools are in the form of questionnaires, interviews and knowledge tests (post tests) using VR. The picture is that on a VR screen, questions are presented and the answers are two types that can be used, namely in the form of multiple choice or answered verbally, where the answers can then be saved. and recorded which can then be corrected.

Meanwhile, the evaluation tool in the form of real-time feedback using VR has almost the same picture as the previous type, only that real-time feedback involves actions or movements chosen by students in a learning scenario, so that the actions chosen will be used as correction material for assessing attitudes, whether the actions what you do is the right choice or not. Then the use of AR in the evaluation process can provide a more real and interesting image display. Apart from that, using AR as an object to observe during the evaluation process can be used as entertainment and ignite students' enthusiasm for learning. Even though its use is not as

widespread as VR, AR still has its own uniqueness in accompanying the evaluation process. Using AR is also simpler than using VR, making it more likely to be implemented in learning.

3.3.2 Integration of Artificial Intelligence (AI) Systems

The definition of artificial intelligence (AI) in Britannica written by B.J. Copeland (2023), namely the ability of computers or computer-controlled robots to carry out tasks that are generally associated with intellectual processes that are human characteristics, such as the ability to reason. (Copeland, 2023) In his book entitled "Artificial Intelligence: A Modern Approach (Third Edition)," Stuart Russell states that currently artificial intelligence (AI) involves various subfields, ranging from general ones such as learning and perception, to more specific ones. such as playing chess, proving mathematical theorems, writing poetry, driving on busy roads, and diagnosing diseases. AI is considered relevant for a wide range of intellectual tasks, making it a universal field. (Russell & Norvig, 2010)

In today's digital era, learning is not only limited to the classroom, but also involves distance learning methods. There have been significant changes in the process of evaluating and assessing student performance. To answer this demand, the use of artificial intelligence (AI) technology can be implemented in the context of student assessment. The existence of AI technology can speed up the assessment process, increase the level of accuracy, and provide instant feedback. (Setyo, 2023)

The integration of Artificial Intelligence (AI) systems in learning brings the potential for personalization, especially in evaluation. This system can monitor individual student activity and responses, identify learning patterns, and provide feedback appropriate to each student's level of understanding. Using AI, evaluation tools can provide recommendations for additional material, special exercises, or learning approaches that can improve students' individual understanding and skills. The existence of AI can also make it easier for educators to prepare teaching needs, including learning evaluation tools.Through innovation in the evaluation process, thematic learning becomes more lively, motivates students to be actively involved, and supports in-depth understanding of concepts. These innovations provide solutions to the challenges of measuring student achievement in thematic learning contexts more dynamically.

3.1 Challenges and Opportunities in Developing Thematic Learning Evaluation Tools

The application of technology in thematic learning evaluation tools may involve technical challenges such as the need for adequate infrastructure, device accessibility, and training for educators to use the tool effectively. The solution that can be offered is to ensure successful adoption by providing adequate training, ensuring technology infrastructure is in place, and considering accessibility needs for students. Seeing the distribution of technology owned by every school in Indonesia, it will take a long time to implement this kind of technology. However, it does not rule out the possibility that the use process will continue in stages, so that there are one or more schools that can implement this kind of technology. (Akbar & Noviani, 2019)

Challenges engage students and educators in the acceptance and use of new evaluation tools. Some students or educators may feel uncomfortable or unfamiliar with new technology. Apart from that, sometimes educators who are actually from the previous generation feel stiff and are still technologically illiterate so that this kind of development will be more difficult. The solution that can be offered is to increase the involvement of students and educators in the design and development stages of tools, provide good training, and develop communication campaigns to increase awareness and acceptance. (Alfalah Riski, 2023). Not all students or schools have equal access to technology devices or internet connections, which can create accessibility gaps. Actions that can be taken are implementing solutions that can be accessed via various devices and considering alternatives for students who have accessibility limitations. (Akbar & Noviani, 2019)

The use of technology in evaluation tools raises issues of data security and student privacy. Handling student data correctly and ensuring privacy is maintained is an urgent need. Gradually develop a strict data security policy, provide a clear understanding to all relevant parties regarding data use, and comply with applicable privacy regulations. (Alfalah Riski, 2023) Developing content that fits a thematic learning approach and technology integration can require significant resources and time. This encourages collaboration between teachers, instructional designers, and content developers to create appropriate and meaningful materials. Implementing a project-based learning model that involves students in content development. With today's technology, opportunities for developing learning content are becoming increasingly broad and interesting to explore. (Alfalah Riski, 2023).

3. CONCLUSION

There are various kinds of learning evaluation tools that are popularly used today. Learning evaluation tools are test and non-test types. As for learning evaluation using tests, examples are oral and written tests as well as action tests. Meanwhile, non-test forms include: observations, interviews, questionnaires, scales, checklists and case studies. The role of technology is influential in several examples of learning evaluation above by giving birth to the digitalization of learning evaluation. By digitizing learning evaluation, it can be easier, automatic and faster so that its implementation can be made effective and efficient. Some of the learning evaluation creations that have been digitalized are Gform & Quizizz. From the several digitalized learning evaluations above, there is still potential to develop learning evaluations. Among them is the integration of AI, AR, and VR, but there are still challenges or obstacles in it that could become opportunities for education in the future.

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