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Develop Technology Based Multimedia For Indonesian Teachers

Ade Muslimat[1], Hadijah Muhsin[2], Hariyaty Ab Wahid[3], Ika Yulistiana[4], Susilawati[5], Denok Sunarsi[6], R. Roro Vemmi Kesuma Dewi[7], Dodi Ilham[8]

[1]Universitas Serang Raya, Serang, Banten, Indonesia
[2]Student of the Doctor of Education Science Program. UNINUS .Bandung.Indonesia
[3]Faculty of Management and Economics, Universiti Pendidikan Sultan Idris, Malaysia
[4.7]STAI Al Aqidah Al Hasyimiyyah, Jakarta Timur, DKI Jakarta, Indonesia
[5]STAI Az-Ziyadah Jakarta Timur, Indonesia
[6]Universitas Pamulang, Banten, Indonesia
[8]State Islamic Institute of Palopo (IAIN Palopo), Sulawesi Selatan, Indonesia
Coresponding Email: Dodi Ilham /dodi@iainpalopo.ac,id

Abstract

Good learning must make the most of the learning media for support the achievement of learning objectives. However, not all teachers are able to make and using computer-based multimedia. The purpose of this research is to find out multimedia user experience using the latest technology for Professional Education Teacher . This study uses a quantitative approach respondent are 22 teachers, collected data using Google Form accordingly instrument and worked on within 10-15 minutes, then analyzed the mean, variance and Standard Deviation uses the ueq-online site. There are five research results from the UEQ test a scale that is categorized as Excellent, namely the Attractiveness, Efficiency, Dependability, Stimulation and Novelty. While the Perspicuity scale is categorized as Above Average accordingly with the UEQ benchmark interval. All average values above <0.08 indicate that evaluation of the experience of using multimedia is positive. The conclusion that learning multimedia using Media Studio's autoplay program is excellent - satisfying to use for Teacher Professional Education

Keywords: User Experience, Multimedia, Indonesian teachers.

1. INTRODUCTION

Indonesia is one of the many countries affected by the Covid-19 virus outbreak or better known as the Corona Virus so that lockdown is carried out in several areas, therefore every level of education implements distance education which aims to reduce the spread of the virus. One of the media that can be used during distance learning is interactive multimedia based learning media. Because multimedia can be applied in various forms according to technological developments, the use of multimedia technology to become a learning medium

is the same as taking advantage of existing technological developments to become a learning medium. (Riyan Arthur, Yusrina Luthfiana 2019). Multimedia is a learning medium that uses computers to support the learning process by creating and combining text, graphics, audio, moving images (video and animation). Examples of interactive multimedia are: multimedia interactive learning, game applications, etc. (Diah et al. 2018) (Linda, Noer, and Oktavianti 2016) There are three stages of using interactive multimedia-based learning media, namely the first stage, namely the define stage, explaining steps -steps of identifying problems, analyzing curriculum, analyzing student characteristics, analyzing learning concepts and analyzing media. The second stage, the development stage of the initial form (prototype) of the product and product validation. The third stage, namely the evaluate stage, describes the steps of the trial and analysis of the results of the trials through questionnaire analysis on a Likert scale which is distributed to students. (Firdian and Maulana 2018) The advantages of this learning model are (a) students are responsible for their own learning (b) the interaction of children and material is constant, easy to remember, becomes not bored because students control themselves (c) Increase learning motivation (d) Provide feedback (response) and (e) utilization control completely rests with the user. Meanwhile, the shortcomings of interactive multimedia are: (a) the process of developing interactive multimedia media requires a professional team and (b) it requires a long time in the development process. (Husein et al. 2015) Interactive multimedia is used as a complementary medium when the teacher explains material in class. When the learning process takes place, use assistance in the form of Microsoft PowerPoint media (Naharuddin 2018). The material presented is the material provided by the lecturer, so in this stage the focus is on the initial design and presentation patterns. The concept that is formed is to create a moving animation character that demonstrates as if presenting the material. (Arthur, Galih Tiara Sekartaji2, Arris Maulana, and Dewi 2019).

Teachers in teaching and learning activities generally will maximize the use of media and multimedia learning, because their benefits can help teachers clarify information and deliver messages, objectives and subject matter to students especially in the classroom. Teachers as multimedia users can actually be designers and make their own multimedia (developers). Technology users are a determining factor in every developer activity, there are several computer technology applications used to develop multimedia. Due to the use of computer technology in multimedia by teachers, efforts to recognize it through user experience (UX) cannot be avoided, where user experience is a person's perception and response that results from using the product, UX design professionals have provided a simple definition that can be interpreted how to feel. you to every interaction you are having with what is in front of you when you use it. User experience is also used in the product interactive (Pucillo, Cascini, Milano, Giuseppe, & Masa, 2014), dynamic User Experience (UX), depending on context, and subject. To get a good User Experience, it's a product must have a match between product features with user needs. Furthermore, for UX evaluation work to discuss the entire user experience (Pucillo et al., 2014), UX measurement provides a response for design actors (E. L. Law et al., 2014), to measure design and appearance has been used in interactive multimedia (Sutcliffe, Hart, Sutcliffe, & Hart, 2016). Meanwhile, to find out the UX test

results, many quantitative measuring tools can be done, including measuring tools using User Experience Questionnaires (UEQ) are available online. UEQ has also been used in assessing interactive media (Schrepp, Hinderks, & Thomaschewski, 2014) to have benchmarks and efficiency in quantitatively measuring the user experience of a product. As a UX test tool, UEQ has a benchmark with six scales, namely; Attractiveness, Efficiency, Perspicuity, With the six scales owned by UEQ, the test results and analysis can know the user experience (UX) on the use of technology including the device multimedia-based computer programs, in this case the UX test of program usage autoplay media studio for multimedia developed by teachers. Results of UEQ takes into consideration the use of technology both from design and content used to achieve maximum learning outcomes. According to Barron and Orwig (1995) that Multimedia can be loosely is defined as a computer-based technology that integrates several, but not all of them, from the following: text, graphics, animation, sound, and video and, when the multimedia environment changes rapidly, so does the meaning of instruction interactive multimedia. According to Frear & Hirschbuhl (1999) how schools are now use interactive computer-based multimedia as a tool for develop the thinking skills necessary to assimilate and turning massive amounts of information into solutions for a mobile society fast this time. So don't let the school have difficulty catching it Many opportunities have to offer new technology tools, but computers are widespread school and some good things are happening (Frear & Hirschbuhl, 1999). There are many types of multimedia that can be applied in learning, by using multimedia learning materials students can be motivated to learning, the role of motivation with multimedia as a whole can improve student learning (Richard E Mayer, 2014) because students can listen to audio, watch videos or view text, animation and graphics simultaneously. All this time, in teacher learning only uses visual media, presentation uses the program simple which has advantages and limitations in class presentation. Media such learning bores students, for lack of variation, such as use of videos, animations, graphics, etc. Apart from that, there is no interactive learning either between teachers and students. Interactive multimedia is a convergence of various media such as video, audio, photos, graphics, animation, and text that are packaged in an integrated and integrated manner interactive (Koesnandar, 2006), in the end multimedia can improve understanding the concept of learning (Gunawan, Ahmad Harjono, 2015). The benefit of multimedia learning is that it will increase the focus on the process cognitive and affective in multimedia learning in various domains learning. Several studies on multimedia in learning have been take a cognitive perspective as well as by considering the affective aspect multimedia learning with the aim of integrating emotions, motivation, and variables other affective models into cognitive processing. Become a professional teacher, create and design your own teaching materials for subjects using Autoplay Media Studio consists of text, image and video dialogues and a monologue creatively designed. The program used to prepare the material is autoplay media studio, this is one of the programs that allows teachers make teaching materials, learning materials, exercises and quizzes with multimedia interactive in classroom learning. Teacher profession as an effort towards professionalism teachers who do not only include professionalism in educating, guiding, teaching, and assessing, but also must do competency development sustainable. the position of teachers is increasingly shaded by legal sources and teachers become more knowledgeable and knowledgeable professionalism

(Disas, 2012), thus it is hoped that teachers who follow education will become more professional, master interactive media (Hasana, S. N., & Maharany, 2017), especially in learning in the industrial era 4.0 (MZ & Rahmawati, 2019). According to Rao (2015) there are three main principles in designing and developing multimedia in learning is to provide 1) Various ways representation 2) Various ways of disclosure and action and 3) various ways Engagement (CAST, 2012). In essence, it focuses on providing "cognitive access", by defining how the learning process can be made more accommodate various backgrounds, experiences, and preferences brought students to class. In multimedia development practice requires expertise in the computer sector to support the multimedia preparation process. The problem is, not all teachers have expertise in the computer field. Teacher accustomed to using simple media, just visual media without interesting interactions. So through teacher professional education all teachers in education is introduced how to design, design and make (develop) interactive multimedia that not only helps students to more easily understand subjects, but also to improve the quality of teaching aspects cognitive and affective (Roxana Moreno & Mayer, 2007) even in general to overcome the problem of learning motivation faced by students, especially school students medium in Indonesia on subjects. In developing multimedia, teachers are expected to pay attention to some factor, those factors are, creative design according to your needs students (Rao, 2015), pay attention to cognitive and affective aspects (Park, Flowerday, & Brünken, 2015) and (Park, Plass, & Brünken, 2014), pay attention to emotional factors (Heidig, Müller, & Reichelt, 2015), recognizing the characteristics of multimedia (Sun & Cheng, 2007), in addition to the several factors above in teacher learning can combine multimedia with online (Kim, 2018). So that in the end the teacher must become multimedia developers according to subject matter and characteristics and needs of students in class and able to spur increased student motivation in learning. Given the importance of using multimedia in learning for achieve learning outcomes, and the fulfillment of cognitive and affective aspects in learning, then the design and use of the media is the main concern of the para teacher (see flowchart 1). To strengthen the theory of Moreno (2006), research on multimedia was carried out (Hung et al., 2015), multimedia with internet in learning English (Thamarana, 2015), multimedia-based computer (R. E. Mayer, 2017) learning theories with media (Ayres, 2015), The research results included in this section are in line with the Learning Theory- Moreno's affective with the Media (CATLM; Moreno, 2006) and shows how emotions and interests facilitate cognitive processing and enhance cognitive outcomes and affective (Park et al., 2014). From some of these studies provide emphasis that multimedia is very effective in learning if the teacher uses it in class meeting. Can be applied by teachers in the subject of Religious Education Islam. Because in other subjects have used multimedia and results the learning is very good (eg English, mathematics, physics, etc.).

According to Barker & Tucker, 1990 (Sunaryo Soenarto, 2005: 116), multimedia is defined as a collection of various different media tools used for presentations. In this sense multimedia is defined as the variety of media used for the presentation of subject matter, for example the use of wall charts or graphics made on cardboard pasted to the wall. Tan Seng Chee & Angela FL Wong (2003) state that multimedia traditionally refers to to the use of

several media, while multimedia today refers to the combined use of several media in presenting learning through computers. Agnew, Kellerman & Meyer (1996) state that the term multimedia is more focused on the interactivity between media and media users. Constantinescu (2007) states that "Multimedia refers to computer-based systems that use various types of content, such as text, audio, video, graphics, animation, and interactivity". The point is that multimedia refers to a computer-based system that uses various types of content such as text, audio, video, graphics, animation, and interactivity. Chapman & Chapman (2004) states that the form of multimedia as a means of delivering messages can be divided into two, namely: online delivery and offline delivery. Online delivery is multimedia that uses a network to convey information from one computer or server machine which is a data storage center to another network, both local networks within an organization or the internet network. Offline delivery is multimedia stored using a storage device or packaging that can moved. These storage devices must be able to store large amounts of data in accordance with the characteristics of multimedia data, for example DVDs and CD-ROMs. After the 1980s, multimedia was defined as the delivery of information in an interactive and integrated manner that includes text, images, sound, video or animation. (Hackbarth, 1996; Philips, 1997; Chapman & Chapman, 2004). Hackbarth (1996) emphasizes that hypermedia and hypertext include computer-based interactive multimedia.

Philips (1997) emphasizes the interactivity component which refers to the process of empowering users to control the environment through computers. Meanwhile, Chapman & Chapman (2004) emphasizes presentation in digital form through a single interface (a single interface). The definition after the 1980s above emphasizes multimedia as a computer-based interactive communication system capable of creating, storing , presenting, and re-accessing text, graphics, sound, and video or animation information. Based on the above description, the term multimedia learning can be interpreted as a computer-based interactive communication system in an integrated presentation. The term computer-based means that multimedia programs use computers to present learning. Whereas the term integrated means that learning multimedia can display text, images, audio, and video or animation in one presentation. Multimedia learning provides benefits in several teaching and learning situations. Philips (1997) states that "IMM has the potential to accommodate people with different learning styles". What this means is that interactive multimedia can accommodate different ways of learning. Furthermore, Philips (1997) states that interactive multimedia has the potential to create a multisensory environment that supports certain learning methods. Based on this, multimedia in the teaching and learning process can be used in three functions. First, multimedia can serve as an instructional aid. Second, multimedia can function as an interactive tutorial, for example in a simulation. Third, multimedia can serve as a source of learning instructions, for example, multimedia is used to store a series of microscope slides or radiographs.

Several research has discussed the prognostic role of capacity deficiency multimedia in the realm of cognitive functions that preschoolers can understand (Chau, Samsudin, & Wan Yahya, 2018), examples from a cognitive perspective can be improved by considering the

affective aspects of learning in various ways (Parket al., 2014), higher ranking of graphic understanding and perceptual levels. lower difficulty students also had higher post-test scores with visual image media (Johnson, Ozogul, & Reisslein, 2014), principles multimedia learning is applied and information is presented by the approach instructional analysis which then carried out further analysis by simplifying concept learning (Chiu & Churchill, 2015). Furthermore, multimedia learning noticing induced positive emotional states has a suppressing effect on the outcome learn because students are distracted from the learning material by their emotions. Meanwhile, motivational measures are not influenced by the emotional state of the participants different, but overall, increased and controlled motivation autonomic motivation decreases during learning (Brünken, Park, & Kn, 2016). However, not many studies, especially local Indonesians, have looked at it the use of multimedia on the side of knowing the user experience for teachers , the teacher becomes a developer as well as being able to use multimedia that will be used in teaching activities. If the teacher can design, design and create their own (developer) technology-based multimedia, that is meaning that the multimedia will be in accordance with the character and emotional of students, will has the power to spur students' intrinsic motivation in learning until in the end students are able to achieve good learning outcomes. Then it's interesting and it is important to do this research, namely research on user experience (UX), because UX determines the direction of technology use as a multimedia tool which can be used for all subjects including subjects.

Linear multimedia is multimedia that is not equipped with any controller that can be operated by the user. Multimedia is running sequential (sequential), for example: TV and films.Interactive multimedia is multimedia that is equipped with a controller that can be operated by the user, so that the user can choose what he wants for the next process. Examples of interactive multimedia are: multimedia interactive learning, game applications, while learning is defined as the process of creating an environment that allows the learning process to occur. So in learning the main thing is how students learn. Learning in terms of students' mental activities in interacting with the environment that results in behavior changes that are relatively constant. Thus the aspect that becomes important in learning activities is the environment. How is this environment created by arranging its elements so that it can change student behavior. From the description above, if we combine the two concepts, multimedia learning can be interpreted as a multimedia application used in the learning process, in other words to transmit messages (knowledge, skills and attitudes) and can stimulate thoughts, feelings, attention and willingness to learn. so that deliberately the learning process occurs, aims and is controlled.

2. METHOD

This study uses a quantitative research approach, featuring data analysis of Mean, Variance and Standard Deviation (standard deviation), the instrument used in this study is from the online User Experience Questionnaire (UEQ).the instrument is available in an Indonesian version, as there are several language versions of the questionnaire developed and validated (eg, English, Spanish, Portuguese and others). These versions are available free of charge at

www.ueq-online.org. With 26 questionnaire items. and participants provide answers within 10-15 minutes. and open-ended questions related to the experience of multimedia users in teacher professional education. Data collection was carried out using the instrument questionnaire through google form and done by participants for 10-15 minutes. Participants in this study were educational participants at the teacher professional education workshop, Indonesia in 2020 are 34 people and participants who gave answers are 20 people, all of whom were developing and using multimedia from program computer autoplay media studio. Quantitative analysis was conducted using the online User Experience Questionnaire (UEQ) analysis available at www.ueq-online.org. The reliability of the UEQ scale is usually high, that is, the Cronbach-Alpha coefficient is usually greater than 0.7. with UEQ benchmarks on six elements or scales, translated into Indonesian: Attractiveness, Clarity, Efficiency, Accuracy, Stimulation, and Newness.

3. RESULTS AND DISCUSSION

The results of the study are calculated by calculating the Mean, Variance and Standard Deviation (standard deviation). To recognize each of the questions given color coding according to the group, namely attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty results according to the scale group From the table above, each item the answer has an average value, variance and standard deviation, which is then known the scale category of the answer results on each item. Question items in the UEQ instrument consist of 26 items that can known on the right or the left which is the benchmark for the direction of weight questions and generate respondents' answers towards a predetermined scale.

Tabel 1. UEQ Value

Scale	Mean	Comparisson to benchmark
Attractiveness	1,39	**Excellent**
Perspicuity	1,71	**Above Average**
Efficiency	2,20	**Excellent**
Dependability	1,89	**Excellent**
Stimulation	2,63	**Excellent**
Novelty	1,19	**Excellent**

Then the results of these items can be concluded with the average value and variants are Attractiveness 1,927, 1,06, Efficiency 2,016, 0.79, Perspicuity1,172, 1,81, Dependability 1.984, 1.28, Simulation 2.359, 0.58 and Novelty 1.906, 0.61, can be see table 1.2 as follows: Next, consider the results of the findings in the value range of each scale is to enter benchmarks on UEQ. An existing benchmark for UEQ which determines the range of practical values for the UEQ factors of the results evaluation of interactive multimedia UX autoplay media studio 8 on professional education teacher , thus can be interpreted better

Based on the UEQ benchmark results diagram, there are five scales categorized as Excellent, namely the Attractiveness, Efficiency, Dependability, Stimulation and Novelty scales. While the Perspicuity scale is categorized as Above Average according to the UEQ benchmark interval that has been set. Here is knowing the reject measure the calculated results on UEQ. In the graph above, it shows that the average value of the questions is appropriate his group. The average impression score between -0.8 and 0.8 is the evaluation score normal, values> 0.8 are positive evaluations and values <-0.8 are evaluations negative. So it can be concluded that the multimedia autoplay media program studio8, tends to have positive impressions (values are in the direction of 1 and above) successively decreasing in the efficiency, attractiveness, dependability, perspiculty, stimulation and novelty.

Table 2 UEQ Value

Scale	Lower Border	Bad	Below Average	Above Average	Good	Excellent	Mean
Attractiveness	-1,00	0,7	0,47	0,39	0,27	0,67	1,39
Perspicuity	-1,00	0,71	0,54	0,48	0,27	0,5	1,71
Efficiency	-1,00	0,57	0,48	0,43	0,32	0,7	2,20
Dependability	-1,00	0,77	0,36	0,33	0,23	0,81	1,89
Stimulation	-1,00	0,5	0,49	0,32	0,24	0,95	2,63
Novelty	-1,00	0,25	0,52	0,35	0,49	0,89	1,19

Table 2 explains that the position of the average value and conditions the value on each scale on the benchmarks specified by UEQ, that is the value shows the results found on each scale. Six UEQ scales are defined, namely Attractiveness, Efficiency, Perspicuity, Dependability, Simulation and Novelty. So from the research results that have been shown above, it was found that five scales were in the measuring position Excellent are Attractiveness (1.39), Efficiency (2.20), Dependability (1.89), Simulation (2.63) and Novelty (1.19), while the average scores are in decline only one measure of Above Average is Perspicuity (1.71). From the values above <0.8 indicates a positive evaluation or it can be said that it is greater than <0.8 is a very good scale or the mention is positive. With an average value above <0.8 on all UEQ scales and benchmarks shows a positive evaluation, it uses technology-based multimedia computer autoplay program media studio. For schools intermediate, some things that need attention diangtaranya is one an integrated approach is to internalize socio-cultural values in learning (Rohman & Hairudin, 2018). Because there is power multimedia such as the power of theory and application of multimedia in learning has a major influence on the

achievement of learning outcomes (Clark, 1992), multimedia has an influence on cognitive and affective learning outcomes (Roxana Moreno & Mayer, 2007) and multimedia has been used in several subjects, for example, eyes mathematics lessons (Chiu & Churchill, 2015), and English subjects (Ampa, 2015) thus, the use of multimedia is not closed in Education learning can be applied well.

The use of multimedia associated with professional teachers, already is a demand that must be applied as a strengthening of its competence. Through Teacher professional education is expected to create professional teachers with good learning competencies, because professional teachers pay attention the demands of the times (Alfarisa, 2015), already know the existence in the industrial era 4.0 (MZ & Rahmawati, 2019). Therefore, professional teachers must show their competence in maximizing the use of instructional media, having high creative abilities in developing multimedia he made, also pay attention to what kind of character strengthening can build student character based on the values of teachings (Zulaikah, 2019), Moreover, there is a tendency that Islamic education teachers use e-learning and social media in distance learning which is required by the government (Salehudin, 2020) the last is the evaluation of Islamic Religious Education learning in schools carried out continuously, comprehensively, and integrated (Hidayat & Asyafah, 2019).Thus the evaluation results are positive on the user experience (UX) multimedia program autoplay media studio will provide benefits in learning in class. As an important note, it is necessary to pay attention to aspects and multimedia developer factors. From emotional factors, characteristics and cognitive affective learning outcomes and computer mastery in particular.

According to Agnew, Kellerman & Meyer (1996) making multimedia projects can help students achieve a wide variety of goals. Furthermore, Agnew, Kellerman & Meyer (1996) stated that "Experience indicates that young children can benefit from creating multimedia projects that include texts, graphics, images, audio and video particularly in the form of animation". This statement implies that children can benefit from multimedia projects that contain text, graphics, images, audio, and video, especially animation. Ariesto Hadi Sutopo (2003) states that multimedia systems have several advantages, namely reducing time and space which is used to store and display documents in electronic form rather than on paper; increase productivity by avoiding loss of files; provide access to documents at the same time and displayed on the screen; provide multidimensional information within the organization; reduce time and costs in making photos and provides the information speed facility needed with visual interaction. In addition, the benefits of multimedia are enabling dialogue, increasing creativity, facilitating collaboration, enriching experiences, and enhancing skills. Multimedia learning is a computer-based learning environment that takes advantage of the flexibility of computers to solve learning problems. According to Lee & Owens (2004), as with most teaching systems, computers can be used as teaching tools to reinforce learning, stimulate learning, and motivate learning. There are many benefits to the flexibility of computers because they can include video, audio, graphic elements, display forms, and the learning process.

4. CONCLUSION

The benefits that can be obtained are that the learning process is more interesting, more interactive, the amount of teaching time can be reduced, the quality of learning can be improved, and the teaching and learning process can be done anywhere and anytime, and students' learning attitudes can be improved. While the advantages of multimedia learning are as following. Enlarge objects that are very small and invisible to the eye, such as germs, bacteria, electrons, and others. Minimize very large objects, which are impossible to present in school, such as elephants, houses, mountains and others. Presenting objects or events that are complex, complex and take place sooner or later, such as the human body system, the operation of a machine, the circulation of the planet Mars, the development of flowers and others. Presenting distant objects or events, such as moon, stars, snow and others. Presenting dangerous objects or events, such as volcanic eruptions, tigers, poison and others. Increase student attractiveness and attention. Teachers can use immensely good - satisfying, professional teachers must be able to design, not just create teaching materials, but composing interactive text, video and sound media added a quiz facility with a creative developer design in multimedia Media studi autoplay program for lessons and professional teachers are demanded also able to make good use of multimedia, especially in classrooms. In addition to the Teacher Professional Education participants, they can become developers multimedia with computer technology, teachers are also able to use all multimedia device created. So the suggestion in this research, the teacher must given provision and training in making (being a developer) multimedia in accordance with the characteristics and emotions of students, so that they will be able to make professional teachers able to develop teaching materials fun and liked by students. Future research is expected to reveal novelty for teachers in developing advanced technology-based multimedia. The learning system does not have to be done conventionally, but can be done in a more modern, efficient and effective way. With the development of communication and information technology has a positive impact on the world of education. Based on the literature study that has been done, it can be said that the use of multimedia provides immense benefits to the world of education. By knowing the important role of multimedia in a learning process, it is fitting that there are no more problems where educators have difficulty determining the right media when in learning. The qualifications of an educator must be continuously improved for the achievement of qualified students. The development of ICT is not a barrier for educators in conveying learning. Multimedia must be used as well as possible in order to achieve the goals of learning in the world of education.

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