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APPLICATION-BASED DIGITAL CONTENT CREATION TRAINING MODEL DEVELOPMENT TO IMPROVE EARLY CHILDHOOD EDUCATORS' PEDAGOGICAL COMPETENCE IN PANDEMIC TIMES

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Abstract

This study examines efforts to enhance the pedagogical competence of Early Childhood Education (ECE) educators. The purpose of this study is to describe the application-based digital content creation training model development and its effect on the pedagogical competence of ECE educators. This research employed research and development techniques (Research and Development), a strategy for creating effective educational products. Interviews, questionnaires, observation of documentation studies, and tests were used to collect data for this study. After data collection, quantitative and qualitative analysis are performed. Quantitative analysis is used to determine the validity of research findings by conducting a series of tests. The training results revealed several findings, including the following: 1) an increase in ECE Educator pedagogical competence, 2) an increase in educator participation in training activities, 3) a high level of motivation for learning, and 4) the establishment of interaction between fellow ECE educators to share learning experiences. Training in the creation of digital content effectively and efficiently through the use of various runs. Thus, the developed application-based digital content creation training model can be used as a substitute model to help ECE educators improve their pedagogical competence in managing online learning during this pandemic period.

Keywords: Training, Digital Content, Early Childhood Educators, pedagogical competence

Abstrak

Penelitian ini merupakan studi yang berhubungan dengan upaya peningkatan kompetensi pedagogik pendidik PAUD. Tujuan penelitian ini adalah untuk memperoleh deskripsi hasil kajian tentang model pelatihan pembuatan konten digital berbasis aplikasi serta pengaruhnya terhadap peningkatan kompetensi pedagogic pendidik PAUD. Penelitian ini menggunakan metode penelitian dan pengembangan (Research and Development) yang merupakan suatu strategi untuk mengembangkan produk pendidikan yang telah terbukti keefektivannya. Teknik pengumpulan data dalam penelitian ini menggunakan teknik wawancara, angket, observasi studi dokumentasi dan tes. Data yang telah terkumpul kemudia dianalisis secara kuantitatif dan kualitatif. Analisis kuantitatif dilakukan dengan melakukan serangkaian pengujian untuk penarikan kesimpulan hasil penelitian. Hasil penelitian Hasil pelatihan menunjukkan beberapa temuan, yaitu 1) meningkatkan kompetensi pendidik PAUD, 2) meningkatkanya passrtisipasi dalam kegiatan pelatihan, 3) adanya motivasi belajar yang tinggi, dan 4) terciptanya interaksi sesama pendidik PAUD untuk saling berbagi pengalaman belajar. Pelatihan pembuatan konten digital dengan menggunakan berbeda berjalan dengan baik dan efektif. Dengan demikian model pelatihan pembuatan konten digital berbasis aplikasi yang dikembangkan dapat dijadikan sebagai model alternative yang dapat meningkatkan kompetensi pedagogic pendidik PAUD dalam mengelola pembelajaran daring di masa pandemic ini.

Kata kunci: Pelatihan, Konten Digital, Pendidik PAUD, Kompetensi Pedagogik

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INTRODUCTION

Education serves as a means of developing an individual's potential and ability to benefit their own interests, in accordance with Fatah, which stated that one of the goals of education is the development and benefit of individuals as well as citizens or citizens of society (Fatah, 2014). To develop a quality generation, education must begin at a young age, in this case through early childhood education, which is education for children from birth to the age of six. Early childhood education is critical given the potential for intelligence and the fundamentals of a person's behavior to be formed during this time period. This period is so significant that it is frequently referred to as the golden age—as Dewi describes it (Dewi, 2017). Early childhood education is a type of education oriented toward children between the ages of zero and six. According to Permendikbud (Permendikbud, n.d.), the types of PAUD institution programs in Indonesia are Kindergarten (Kindergarten)/ Raudatul Athfal (RA)/ Bustanul Athfal (BA), PlayGroup (KB), Child Care Park (TPA), and Similar ECE Units (SPS).

In Early Childhood Education (PAUD), the process of teaching and learning is more precisely referred to as the process of learning while playing and playing while learning. Educators serve as mentors, community builders, and caregivers. Achieving a high standard of ECE necessitates effective management of educational resources, which includes educators/educators. Education cannot be achieved without educators. Educators also hold a leadership position and become central to education because they interact with students in the classroom during the teaching and learning process, as Mulyasa pointed out, making educators one of the primary conditions that must be considered when developing education in order to contribute to improving the quality of human resources (Mulyasa, 2012).

The Pandemic of Coronavirus Disease 2019 (Covid-19), which began in early March 2020 in Indonesia, had a profound effect on all fields, including education. This condition inevitably alters the educational system at all levels, from college to early childhood education, which was previously conducted in the traditional manner. In early childhood education, learning techniques such as web-based (Web Base Learning), internet-based, or e-learning are used to adapt to the situation. An e-learning system is a method of implementing learning that makes use of the internet in the form of websites and weblogs to display a variety of multimedia content. It is the process of transitioning from traditional to digital learning. To ensure that learning continues throughout the Covid-19 pandemic, the Minister of Education issued Circular Letter No. 3 of 2020 on the Prevention of Corona Virus Disease (COVID-l9), which requires all schools and universities to implement. Rather than that, learning activities are conducted online using a variety of digital applications as an alternative to online learning media solutions, such as Zoomcloud Meetings, Google Meet, Teamlink, learning management systems (LMS), Google classroom, and WhatsApp (WA), among others ((Anggrasari, 2020). Numerous services can be used to aid in discussions about educational content. Additionally, this is accomplished through the utilization of all available local resources, such as television channels, on a national level. In Indonesia, educational content is currently broadcast nationally via TVRI television channels. The broadcast content is classified according to the level of education, from elementary to secondary, in accordance with the Indonesian curriculum.

Education that has begun is expected to be continued and refined in order to meet the concept of blended learning, which is an educational concept that combines face-to-face classroom instruction with online instruction. Later, education will enter the era of education 4.0, in which all units of education will conduct both face-to-face and online learning. Online learning is defined as the process of transferring knowledge through the use of video, audio, images, text communication, and software, all of which are facilitated by an internet connection. This shift in knowledge transfer via website forums and digital technology trends is a hallmark of industrial revolution 4.0, aimed at facilitating learning during the COVID-19 pandemic (Basilaia & Kvavadze, 2020). Technology integration is a characteristic of online learning that encompasses a variety of innovations. The critical factor in implementing online learning is educators' and students' readiness to interact online (Banggur et al., 2018).

According to observations of online learning (e-Learning) implementation by ECE educators in the Ciawi sub-district during the Covid-19 pandemic, digital media use in online learning is still extremely limited. This is because ECE educators have not adapted to and are not prepared to fully implement online learning, resulting in suboptimal results. Digital literacy skills are inextricably linked to online learning (e-Learning). Gilster defines digital literacy as the capacity to comprehend and make use of information obtained through a variety of digital sources (Munir, 2017). Thus, it requires not only the ability to read, but also the ability to apply critical thinking to the information obtained via digital media. Digital literacy refers to an individual's interest in, attitude toward, and ability to use digital technologies and communication tools to access, manage, integrate, analyze, and evaluate information, create and communicate new knowledge, and participate effectively in society (Sujana & Rachmatin, 2019).

Educating and training ECE educators is one of the efforts that can be made to improve their competence. This study created a training model that can help ECE educators improve their pedagogical abilities. The necessary model is one that demonstrates the practical necessity of online learning. The application-based digital content creation and training model was chosen for development in this study.

Training

Training is a technique used to enhance human performance (Silberman & Auerbach, 2013). Training is specific and focuses on mastering a specific task or set of functions (Cartwright, 2003). Buckley and Caple defined training as a deliberate and systematic effort to modify or develop knowledge/skill/attitudes through the learning experience in order to achieve effective performance in a particular activity or set of activities (Buckley & Caple, 2004). Its purpose in the workplace is to enable an individual to acquire the skills necessary to perform a given task or job adequately. Training is defined as an effort to acquire knowledge, skills, and attitudes that can be immediately applied to improve performance (Pribadi, 2016). The term "training" refers to deliberate or planned processes, not to accidental or spontaneous activities.

Training is a process that entails a series of systematic and planned activities aimed at achieving a specific objective. Training is a subset of education that focuses on the process of learning outside of the school system. It typically lasts less than a year and emphasizes more practice. Training is organized in accordance with the requirements of the workplace and the broader community environment (Kamil, 2012). Training is a learning effort orchestrated by

organizations (government agencies, non-governmental organizations, and businesses, for example) in order to meet organizational needs or objectives (Sudjana, 2007).

Application-Based Digital Content

The large Indonesian dictionary (KBBI) defines dictionary content as information delivered via electronic media or products. Content can be delivered directly or indirectly via a variety of mediums, including the internet, television, and audio CDs. Even now, it is accomplished through the use of a mobile phone (Mobile Phone) (Depdikbud, 2003). The content, or subject matter, is a critical component of the learning process. The content, or subject matter, is inextricably linked to the learning objects. Hodgins and Duval defined Learning Objects as any type of material, digital or analog, that can be used for the purpose of learning, education, or training(Paulins et al., 2015).

An application is a piece of software that combines various features in such a way that the application can access data in accordance with its understanding. Indeed, the application's function is not dissimilar to the reason for its creation. It provides comfort and convenience in a variety of spheres of life. This can be used to derive a variety of application functions for use in a variety of different areas of life. The following are some of the components of the application that should be familiar: 1. Is capable of facilitating one's work. 2. As a function of entertainment media 3. Communication and friendship media. 4. To keep you informed of current events. This study makes use of the application word wall. In this pandemic era, educators use Wordwall as a substitute for creating interactive and creative learning media online. This web-based application can be used to create educational media such as quizzes, matchmaking, anagram pair pairing, random words, word distribution, and grouping.

Early Childhood Educators' Pedagogical Competence

Korth et al. asserted that a teacher who is willing to learn in any situation improves teacher quality (Korth et al., 2009). Additionally, a teacher's readiness to engage in the learning process has a significant impact on the success of education in schools. Teachers who are enthusiastic about their work will be able to enhance their students' learning (Arini & Kurniawati, 2020). Meanwhile, according to (Hanifa, 2017), an educator has been prepared to oversee the learning process by planning, implementing, evaluating, and following up on certain items deemed necessary by teachers.

According to Article 8 of Chapter IV of the Law of the Republic of Indonesia, Number 14 of 2005, "Teachers must possess educator qualifications, competencies, and certification, be physically and spiritually healthy, and contribute to the achievement of national education goals." Additionally, Article 10 states that "the competence of teachers as defined in Article 8 includes pedagogical competence, personality competence, social competence, and professional competence acquired through the practice of the profession." According to Permendikbud No. 137 of 2014 on national standards for early childhood education, one of the pedagogical competencies of ECE teachers is the ability to organize and write assessment reports, as well as evaluate early childhood learning processes and outcomes. Meanwhile, Suryana (Lina et al., 2019) asserts that the teacher's ability to manage learning is critical. Competence is the combination of knowledge, abilities, and fundamental values manifested in one's way of thinking and acting. Another definition of competence is the specification of a person's knowledge, skills, and attitudes and their application in the workplace in accordance

with the performance requirements of the field. Thus, the competence of each educator reflects the educator's actual quality.

These competencies will be demonstrated through mastery of knowledge, abilities, and professional attitudes in the performance of their educational roles. Numerous perspectives suggest that teachers' readiness to prepare for learning is critical. There are four dimensions to pedagogical competence.

1. Becoming acquainted with the characteristics of students
2. Developing planning abilities
3. Application of acquired knowledge
4. Assessment of learning

METHODS

This research employed research and development techniques that, according to Gall et al. are a strategy for developing effective educational products (Gall et al., 2003). According to Borg and Gall's references above, the research steps can be simplified into four phases: (1) preliminary study; (2) development of conceptual models; and (3) trials of conceptual models. Additionally, (4) the creation of recommended models. Preliminary studies include (1) theoretical and regulatory studies and (2) data collection (empirical studies); model development stages include (1) conceptual model design, (2) model design validation by a team of experts and practitioners, and (3) hypothetical model development; and trial stages include (1) limited model trials (phase I and II training trials). Prior to conducting research, a training design is created that will be used for both limited and extensive tests, as well as product testing. The training took place at four distinct locations. Each institution is one when the test is limited to five educators, two when the test is extensive, and one when the product is being tested.

The study collected data through interviews, questionnaires, observation of documentation studies, and tests. Interview techniques were conducted in accordance with interview guidelines that have been developed for preliminary studies, model preparation, model trials, and model validation. To gather data on training implementation, interviews were conducted with kindergarten supervisors in Ciawi Subdistrict, IGTK administrators in Ciawi Subdistrict, and educators at ECE institutions in Ciawi Subdistrict. Questionnaires are distributed to all citizens learning to ascertain the suitability of training models for specific learning needs. Questionnaires are also used to collect data on trainees' perceptions of application-based digital content creation training that has been implemented in greater depth to improve the pedagogical competence of ECE educators during pandemic times. Observation techniques are used to directly observe the objective conditions of application-based digital content creation competencies in order to improve the pedagogical competence of ECE educators during the pandemic period in the Ciawi Subdistrict, as well as trainees' activities during limited trials and larger trials. Techniques of documentation study are used to supplement data gathered through observation, interview, and questionnaire. Test techniques are used to determine the model's effectiveness, specifically to determine the competence of application-based digital content creation in order to improve the pedagogical competence of ECE educators during the pandemic, both before and after the training is completed.

After data collection, it is quantitatively and qualitatively analyzed. Quantitative analysis is the process of conducting a series of tests to determine the validity of research findings. This

quantitative analysis method is used in phase I and phase II clinical trials. The non-parametric statistical difference test analysis is the analytical technique used to test hypotheses. This test will examine differences in application-based digital content creation competencies to determine how to improve the pedagogical competence of ECE educators during pandemic times prior to and following training. Additionally, qualitative data analysis is used to interpret objective descriptions of test results, interview findings, and observation findings that are used in conclusion withdrawal and retrieval.

RESULTS AND DISCUSSION

Results

Objective Condition of The Training

Prior to beginning the research, the researchers conducted an observation of field problems. The difficulties encountered in the field of pedagogical educators prompted researchers to focus on the development of digital-based educational content. This was chosen because educators must be able to compensate for the fact that children in early childhood are already accustomed to being near a device due to their small size. A cause for concern is frequently found in the condition of children who are gadget addicts. Additionally, children will not necessarily be kept away from gadgets due to the difficulty. As a result, educators are expected to be able to utilize technology to compensate for this circumstance. Four early childhood education institutions (ECE) in Ciawi, Tasikmalaya, were observed. The results of these observations revealed a deficiency in educators' pedagogical abilities as a result of their inability to keep up with the advancement of technological science. Incapacity is influenced by several factors, including the following:

a. There is a lack of literature in the Ciawi area on the pedagogical abilities required of ECE educators.
b. There is still a lack of literature on educational application-based technology science development in the Ciawi area.
c. How conventional educators convey material results in early childhood being unable to acquire the various characters specified in Permendikbud.
d. Limited information in the area and limited technology make it somewhat difficult for educators to find enjoyable early childhood learning media.

It is critical for ECE educators to have the pedagogical ability to keep up with technological advancements in order to accomplish these goals. The researchers then discuss one of the competencies that ECE educators must possess, namely Core Competence (CC). The purpose of knowledge is to master the physical, moral, social, cultural, emotional, and intellectual characteristics of learners, as well as to master learning theory and educational learning principles. In light of these Competencies and Indicators, as well as persistent problems in the field, educators' pedagogical abilities require improvement. More precisely, these capabilities must coexist with technological advancements. This is to ensure that ECE educators are familiar with a variety of educational applications that can be used to facilitate interactive and inspiring learning.

The training model used to enhance the pedagogical competence of ECE Educators in Ciawi Subdistrict remains conventional. According to the analysis results, the use of digital media in online learning by ECE educators in the Ciawi sub-district during the Covid-19 pandemic is

still minimal. This is possible because ECE educators have not adapted to and are not prepared to implement rigorous online learning, resulting in suboptimal results. The application-based digital content training model is one of the training models developed to help ECE educators improve their pedagogical competence. The researchers chose and developed the Wordwall application in this model.

Development of Application-Based Digital Content Training Model to Improve Pedagogical Competence of ECE Educators during the pandemic in Ciawi Subdistrict

The introduction of wordwall application training model development is not a one-time event. The researcher establishes validity first. Validators are subject-matter experts. Validisai tests examine several observed aspects, including the following: a) sinntak aspect, b) reaction principle aspect, c) support system aspect, d) instructional impact aspect, and d) accompaniment impact aspect. The initial validation test yields a result of 25%. The validity results are then evaluated using the following assessment criteria.

Table 1. Validity Level Criteria and Product Revision

Percentage (%)	Validation Criteria
76 – 100	Valid (No Revision Needed)
56 – 75	Valid Enough(No Revision Needed)
40 – 55	Less Valid (Revision)
0 - 39	Not Valid (Revision)

A value of 25% is an invalid criterion based on these criteria. As a result, researchers conduct product revisions. After repairing the product, the researcher validates it again with the same expert. Following that, the researcher conducted a second validation test. The outcome obtained a percentage of 41%. These findings are still based on less reliable criteria. The product was validated a third time and a value of 70% was obtained. These findings include criteria that are either completely valid or do not require revision. Nonetheless, it requires refinement in order to improve the effectiveness of the training process. The researchers conducted a fourth validation test and obtained a perfect score. Both validators determine that the product is ready for field testing based on the validation results.

Following several revision processes, researchers conducted trials in a variety of stages, including limited trials, revisions, extensive trials at two institutions, revisions, and product testing. Training activities are conducted at four distinct institutions, each with its own unique testing process. The first school institutions to receive training are those involved in limited research trials. The following school is during school A's extensive testing. The third school receives training during school B's extensive test. The most recent school to receive training is undergoing a product trial process. Each school selects five educators as research subjects.

The training begins with the creation of a 150-minute training plan. Prior to training, the school's first five educators are given a pretest. The pretest is available online via Google Forms. These activities take place outside of scheduled training hours. The training process begins with speakers delivering essential competencies. The competency at issue is the requirement for a ECE educator to understand the characteristics of learners. Additionally, the

speaker emphasized the critical nature of ECE educators mastering learning theory and principles of learning. The training's core activities begin with the careful distribution of all materials pertaining to pedagogical educators. More precisely, this ability relates to the necessary mastery of early childhood characteristics and learning theories. Following that, educators introduced the application for wordwall maze chases. The speakers demonstrate the application's operation and the process of creating educational games within the application.

The following stage of training is the question and answer session. Resource Speakers provide an opportunity for trainees to ask questions about how the wordwall maze chase application works. Additionally, trainees are welcome to inquire about the possibility of creating educational games using the maze chase wordwall application. The procedure that follows Q&A is practice. This practice is carried out by trainees. All trainees must operate their own devices and create games using the maze chase wordwall application. Following that, they presented the games they had created and evaluated collaboratively. All participants were also given the opportunity to respond or provide input following their presentation of the educational game. The concluding section marks the conclusion of the training series. Throughout, the speaker emphasized the critical nature of developing innovation grounded in technology science. Educator-led innovations should be capable of enhancing the character of early childhood. To accomplish this, games must undoubtedly adhere to early childhood's cognitive, psychomotor, and affective levels. The entire training sequence is observed.

The observer assigned a score of 44 to training activities conducted on limited trials. In comparison, the observer assessment of training activities during school A's extensive trial yielded a score of 44. Additionally, the observer assigned a score of 46 to the training activities during the B-school-wide trial. The numbers fall within the range of good to very good, but are closer to very good. As a result, the activity during the application-based digital content development training on limited trials, the extensive trial of school A, and the extensive trial of school B is excellent. Additionally, product trials provide insight into participants' reactions to the implementation of application-based digital content models. The observer assigned a score of 47 to training activities. The figures adhere to stringent criteria. As a result, the activity level during the application-based digital content development training on product trials is quite high.

Application-Based Digital Content Training Model Effectivity to Improve Pedagogical Competence of ECE Educators during the pandemic in Ciawi Subdistrict

The effectiveness of training can be determined by administering a pretest and a posttest to trainees who are working with application-based digital content. The effectiveness of the application-based digital content development training process can be determined by the results of initial tests (pretests) and final tests (posttests). The test is given to educators as a pedagogical matter and contains up to 25 multiple choice questions. Both before and after the training, a test is administered via Google Form. Throughout limited trials, A-school-wide trials, B-school-area trials, and product trials, tests are administered to all trainees.

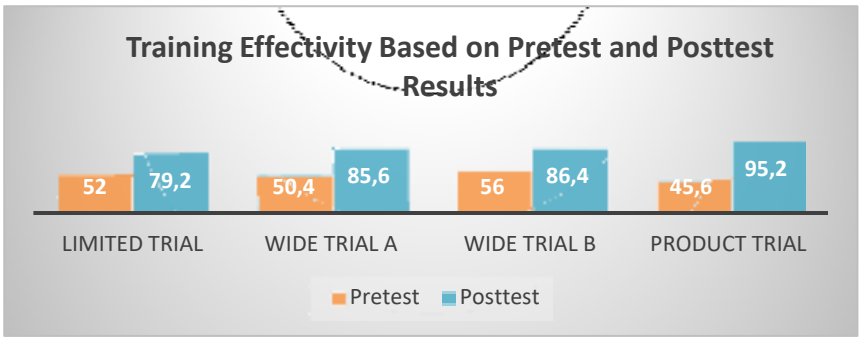

Figure 1. Pretest and Posttest results of Apps-Based Digital Content Creation Training

Based on the image, it is known that the trial is limited to the pretest. The average value obtained is 52, and the average posttest value has increased by 79.2 with a significance value of < 0.05, which is 0.000. Furthermore, in the widespread trial in school A, the average grade of pretest obtained is 50.4, and the posttest average score is 85.6 with Wilcoxon test results on school A-area tests with the significance of <0.05, which is 0.000. In the area trial of school B, the average pretest score is 56, and the average posttest score increases to 86.4 with a signification value of >0.05, which is 0.041. While in the product trial, the average value of pretest obtained was 45.6, and the posttest value increased by an average of 95.2 with a significance value of <0.05, which is 0.000. The five showed an increase in educator pedagogical abilities through the development of digital content training conducted on ECE educators in Ciawi.

Discussion

As previously stated, educators' competence become critical. Anggrasari explains that during this pandemic, all learning processes are conducted online, necessitating educators to enhance their pedagogical abilities, particularly in the use of technology in learning (Anggrasari, 2020). According to Anggrasari, learning activities during the pandemic period are conducted online via the use of various digital applications as an alternative to online learning media solutions, for example (Anggrasari, 2020). According to the study's findings, educators' lack of pedagogical ability is a result of educators' inability to keep up with the advancement of technological science. The difficulties encountered in the field pertain to pedagogical educators, prompting researchers to develop digital-based educational content. The researchers select the Wordwall app and develop a training module for educators to use in the classroom. Pribadi defines training as an effort to acquire knowledge, skills, and attitudes that can be immediately applied to improve performance (Pribadi, 2016).

Training models for application-based digital content creation are developed in stages, beginning with validation tests, limited tests, extensive tests in schools A and B, and product tests. Two validators with expertise in Early Childhood Education conducted the validation test. Based on the trial results, this digital content creation training will be implemented using training principles. According to (Simamora, 2006), the training process must include three stages: a) The assessment stage, which serves as a useful foundation for subsequent training efforts; and b) the training and development stage. The training program is developed and presented; and c) the evaluation stage, during which the impact of training and development on the specified needs is assessed. The following describes the process of digital content creation training.

1. Preparation entails administering pretests to participants and developing plans for training implementation.
2. Implementation, which includes the delivery of materials, the practice of creating games in the application, the presentation of practice results, discussion, and Q&A.
3. Evaluation, including post-testing, summarizing training results, and motivating participants.

The training outcomes revealed several findings, including the following: 1) increasing the ECE educators' competence; and 4) being able to encourage participants to apply knowledge and skills acquired in the workplace.

Additionally, some changes in the behavior of ECE educators following training can be identified.
1. Possess the ability to analyze the personalities of various learners.
2. The capacity to create enjoyable learning environments for children.
3. The capacity for operating and utilizing technology for educational purposes is increasing.
3. The variety of educational games that can be created via applications is greater.

Enhancing educators' pedagogical competence, such as their ability to use various technologies during pandemics, becomes critical capital for developing effective and enjoyable early childhood learning content. With this capability, ECE educators can prepare students to learn in any situation or circumstance. 2) increasing participation in training activities, 3) fostering a culture of learning, and 4) fostering interactions between ECE educators in order to share learning experiences. Additionally, based on observations, it is known that digital content creation training activities using the word wall application are running smoothly and effectively across four trials in various locations. According to Heinich (Pribadi, 2016), an effective training program demonstrates four characteristics: 1) the ability to assist participants in achieving goals or competencies during the training program, 2) the ability to motivate participants to continue the learning process, and 3) the ability to improve participants' memory or retention of the knowledge and skills acquired during the training program. According to Arini & Kurniawati, an educator's readiness to face the learning process has a significant impact on the success of education in schools, and educators who demonstrate a high level of readiness will be able to help learners improve their learning (Arini & Kurniawati, 2020).

Based on the review process for the implementation of research and findings, the developed application-based digital content creation training model can be used as a substitute model for enhancing the pedagogical competence of ECE educators in managing online learning during this pandemic era. The model diagram is as follows :

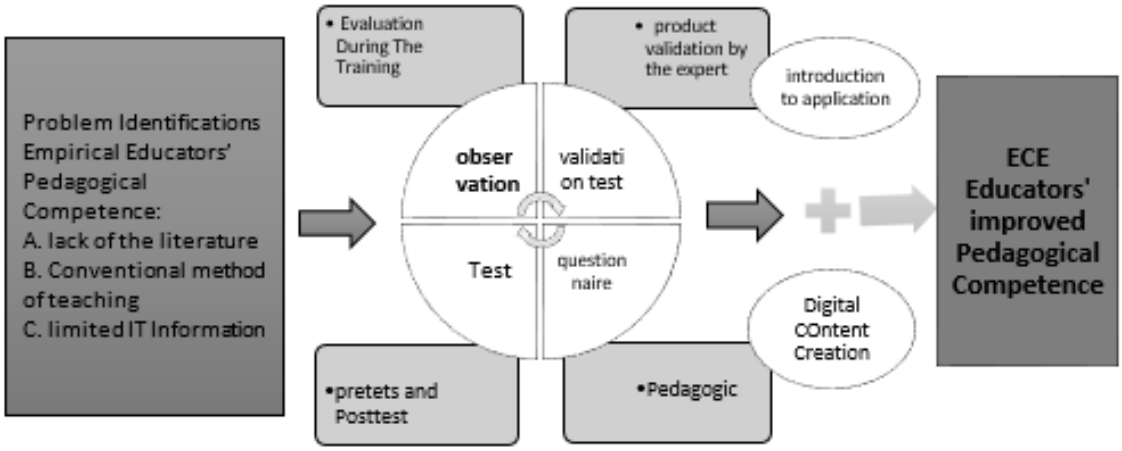

Figure 2. Application-Based Digital Content Training Model Development

CONCLUSION

Achieving a high standard of ECE requires prudent management of educational resources, which includes educators/educators. Educators play a critical role in education. Educators also hold a leadership position and become central to education because they come into direct contact with students during the teaching and learning process. The issues identified in the field concern pedagogical educators, prompting researchers to develop digital-based educational content training models. The training model is developed over a number of stages, including validation trials, limited trials, extensive trials in schools A and B, and product trials. Four validation tests are conducted in order to obtain a percentage value of 100%.

Additionally, limited trials of application-based digital content creation training, extensive trials in schools A and B, and overall product trials are proceeding well. Educators' pedagogical abilities improve both prior to and following training. As a result, we can conclude that the application-based digital content creation training model is also effective at increasing educators' pedagogical competence. This research demonstrates the continued need for educators to receive training. This is done to ensure that their knowledge and pedagogical abilities are maintained on a continuous basis.

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