



An E-Training Model for Improving Early Childhood Teacher Competence in Purwakarta, Karawang, Subang, and Bekasi

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Abstract: In 2019–2020, Indonesia had 203,488 early childhood education (PAUD) units serving 5,691,201 students with 431,215 educators; West Java alone had 28,723 units. To address cost and distance barriers to competency development, this R&D study developed and tested an online training model (synchronous/asynchronous, MOOC-based) for PAUD educators. Data (interviews, observations, documentation, focus group discussions, questionnaires) from 70 sample participants indicated that educators possessed pedagogical, personality, social, and professional competencies but required continuous skill enhancement. Pre-post tests demonstrated significant competency improvement after the online training, and user trials reported high satisfaction and alignment with career needs. The study concluded that online training is effective when implemented collaboratively, participatory, and constructively to encourage educators' learning independence.

Keywords: early childhood education; educator; e-Training; participative learning.

Introduction

There are 427,599 early childhood education (PAUD) teachers in West Java Province. The problem with competency criteria is that not all of them have a bachelor's degree. Efforts to organize tiered training up to 2019, face-to-face (conventional) only managed to reach 200,528 participants. Likewise, online training in 2019 attracted only 4,223 participants, down from 3,363 in 2018 (PP-PAUD and Dikmas West Java, 2019). The failure to achieve face-to-face and online training is related to obstacles, namely: (1) high costs of implementation, especially from the operational aspect of the program, (2) high costs of printing learning materials, (3) accommodation and consumption costs, and (4) time is very limited (Weiland, 2021).

The destruction of conventional training can refer to changes or shifts in traditional training approaches. Some factors that can cause this change include advances in technology, evolving job-market needs, and challenges with conventional training methods. The destruction of conventional training is no longer effective, as significant changes in how we learn, interact, and work have rendered it ineffective. The factors that are the reasons for the destruction of conventional training, namely the development of technology and increasingly growing internet access, have changed the way we access information and learn. With the existence of online learning platforms, videos. Therefore, the solution is to initiate e-training for PAUD educators. This training has the following advantages: (1) affordable and efficient implementation costs; (2) unlimited participant quotas in capturing more targets and can reach wider areas; (3) can be accessed through various media connected to the internet; (4) more flexible training time with available materials that can be studied offline and the material can be repeated at any time; (5)

The materials available are more extensive, not only training materials but also other materials that support teacher competence (Dhawan, 2020).

E-training, or electronic-based training, is a learning approach that uses digital technology, such as computers, the internet, and specialized software, to deliver training materials to individuals or groups. In the context of Early Childhood Education (PAUD) educators' competency, e-training plays a crucial role in preparing and enhancing their capabilities. E-training, or electronic training, is a pressing need for PAUD educators in West Java, as in many other regions. E-training allows PAUD educators to access the latest educational materials and innovative teaching techniques. This helps them stay informed about the latest developments in early childhood education. It can also provide PAUD educators with the additional knowledge and skills needed to deliver quality instruction. They can gain insight into effective learning methodologies and best practices in teaching young children (Sutarto, Edi Mulyo, et al., 2019).

Based on data from the PAUD Dikmas management of the Ministry of Education and Culture, as of the 2019-2020 academic year, there were 203,488 non-formal PAUD units throughout Indonesia, serving 5,691,201 students and supported by 431,215 PAUD educators. West Java Province, the second-largest number of PAUD units in Indonesia after East Java, has 28,723 PAUD units, including formal and non-formal PAUD (Dapodik 2019/2020). The large number of units has not been balanced by adequate quality among PAUD teachers, as seen in national data from the Directorate General of Education Dapodik.

PAUD and Dikmas report that more than half of non-formal PAUD teachers in Indonesia (215,516 people), especially in West Java (32,822 people), have not completed a bachelor's degree and also more than 90 percent of PAUD teachers in Indonesia are graduates of study programs other than PAUD Teacher Education. In addition, Dapodik data shows that 65.82 percent of PAUD educators in Indonesia have not completed a bachelor's degree. This is also evident in West Java, where the majority of non-formal PAUD educators are high school graduates. Based on the data presented, it can be concluded that most PAUD educators or teachers in Indonesia do not have an educational background that can support their competence, especially pedagogical competence, as professional PAUD teachers (Agilda et al., 2025). Thus, education and training services are among the efforts that can be undertaken to encourage the improvement of PAUD educators' competence.

The organizer of the e-Training program or a partner of the Directorate General of Early Childhood Education and Training (GTK PAUD) is one of the implementing institutions, namely the Rausan Fikri Training Organizing Institution, located at Taman Tridaya Indah 2, Block H20 No. 5, Tridaya Sakti Village, Tambun Selatan District, Bekasi Regency. The institution has facilitated more than 420 Early Childhood Education (PAUD) educators spread across Purwakarta Regency, Karawang Regency, Subang Regency, Bekasi City and Bekasi Regency with a portion of 40 people in each region. Training participants are limited by training administrative prerequisites, namely first, physically and mentally healthy, second, maximum age 55 years, third, minimum educational qualifications of high school / equivalent, fourth, registered in DAPODIK, fifth, have a SIMPKB account, sixth, have never participated in Basic Level Training for Early Childhood Education (PAUD) teachers, seventh, have internet access, eight have basic skills in Information and Communication Technology (ICT) (Bourke et al., 2024).

A certificate of completion will be awarded to participants who have completed the entire series of activities as stipulated and have obtained 2 (two) main components of the assessment, namely the value of the material deepening stage and the implementation of independent tasks, with a minimum predicate of sufficient. Participants who receive a certificate have the right to be recognized as an Early Childhood Education Teacher who has met the criteria as a young companion teacher in their respective work scope, use the certificate to be submitted as a credit point in performance awards in the scope of duties and positions in the field of Early Childhood Education educators, use the certificate as part of evidence of career development and competency improvement as an Early Childhood Education educator (Valle-Flórez et al., 2024).

Teacher professionalism is closely related to the ability to actualize the competencies required of each teacher. Competence is defined as the knowledge, skills, and core values reflected in habits of thought and action. Another meaning of competence is the specification of a person's knowledge, skills, and attitudes and their application in work, in accordance with the performance standards

required by the field. Teachers' competencies demonstrate their true quality. These competencies will be manifested in the form of mastery of knowledge, skills, and professional attitudes in carrying out their duties (Diamond & Bulfin, 2025). Therefore, Teacher Competency Standards can be defined as a statement of the required criteria, established and mutually agreed upon in the form of knowledge, skills, and attitudes for an education worker to be considered competent.

In Government Regulation No. 19 of 2005, Article 28, paragraph 3, it is stated that teacher competencies as learning agents at the elementary and secondary education levels as well as early childhood education include; (1) pedagogical competencies, (2) personality competencies, (3) professional competencies, and (4) social competencies. Teacher competency standards are developed as a whole from these four main competencies. These four competencies are integrated into teacher performance. Referring to the Regulation of the Minister of National Education Number 16 of 2007, teacher competency standards include core teacher competencies and are developed into teacher competencies in each educational unit.

One way to implement e-Training is through the asynchronous Massive Open Online Course (MOOC) learning strategy. MOOCs are online courses with free and open enrollment options, publicly shared curricula, and open outcomes. MOOCs integrate social networks, accessible online learning resources, and are facilitated by leading practitioners in the field. Most significantly, MOOCs foster learner engagement, allowing learners to self-regulate their participation based on learning objectives, prior knowledge and skills, and shared interests. The term emerged in 2008, although versions of massive open online courses existed before that time (McAuley et al., 2010). Some MOOCs have had over 2,000 enrollees. MOOCs have provided learning based on a predetermined time (schedule) and weekly topics as the user (learner) considers, but generally have no cost, no prerequisites other than Internet access and interest, and no formal accreditation, however there are also some examples of MOOCs that are affiliated with universities and give learners the option to formally enroll in the course and submit assignments for assessment and a certificate upon completion of the course.

In line with the management of e-Training implementation through MOOC learning strategies, PAUD (Early Childhood Education) educational institutions are institutions that are organized based on the aim of building potential and preparing for superior child growth and development. (Barnett, 1995) states that early childhood education programs have a positive impact on children's cognitive and social development. (Bakken et al., 2017) also state that early childhood education has good long-term benefits for children's social and emotional maturity in the future. In addition to providing benefits for individual children themselves, quality PAUD programs can also contribute socio-economic benefits to a society and a country. This is supported by the results of elaboration (Vandenbroeck et al., 2018) in their research report which states that early childhood education can not only improve the quality of life of children and families in the future, but also provide socio-economic benefits for society and the government.

The implementation of e-Training programs through MOOC learning strategies for PAUD educators needs to emphasize the principles of adult learning. Based on the results of a preliminary study, it was found that the current online training program has weaknesses, including: 1) not prioritizing training materials that are appropriate to the needs of participants, resulting in overlapping training materials, 2) learning resources in the form of digital modules that have not yet met the criteria for adult learning, 3) the website used is not dynamic, only informative not interactive aspects, 4) there is no online learning contract that can be agreed upon before the learning begins, so that some participants are often absent and do not complete assignments. Based on this, the implementation of e-Training through MOOC needs to apply the principles of adult education, so that the training process can run according to the objectives and expectations of the training (Pendergast et al., 2024).

The ability to develop knowledge and skills in technology management presents a significant opportunity for learners in today's new era. Learners can choose their desired topics or topics independently according to their desired learning success. Currently, there is a learning medium that considers this possibility, Massive Open Online Courses (MOOCs), an online course offered openly by many providers, both companies and educational institutions. Various disciplines utilize MOOCs to support online-based activities. According to (Praherdhiono et al., 2018) in human life, the social construction of learning democracy requires a flexible system. The desire of, by, and for learners is the idea behind the development of MOOCs.

Based on these empirical conditions, during the current endemic period, all educational institutions and their resources are ready to optimize their potential. The positive impact of the pandemic is that educational institutions, their resources, and students are prepared to adapt to digital developments and implement student-centered learning, making learning more interactive and engaging, and enabling the use of diverse learning methods. Over time, and as COVID-19 cases decline (the endemic period), students' skills in utilizing technology are rapidly developing, complemented by various supporting infrastructure, known as online learning. The development of information systems is currently very rapid, offering users convenience and ease of use. This can be seen in the various activities organized by an information system (Putra et al., 2018).

Information and Communication Technology (ICT) has quickly become a foundation for modern society. Every country now considers understanding ICT and mastering its basic concepts to be integral to education, alongside reading, writing, and arithmetic. Likewise, in Indonesia, every educational institution must prepare for the Industrial Revolution 4.0, including the availability of technological facilities and infrastructure, internet networks, and electricity supply. At the same time, ICT can add value to learning processes and the organization or management of educational institutions (Fahimah et al., 2023). The internet is a driving force for this development and innovation in both developed and developing countries (Abbott, 2003). Technological developments are creating changes in jobs and work settings, and the required competencies are also evolving. The competencies of teachers or educators are currently grouped into six aspects, namely: 1) understanding of ICT in education, 2) curriculum and assessment, 3) pedagogy, 4) information and communication technology, 5) organization and administration and 6) professional teacher learning (Dasli, 2019).

The ICT curriculum developed by educational institutions should contribute to the development of these competencies. This digitalization program represents a new breakthrough that leverages ICT developments to facilitate the teaching and learning process. The use of ICT in education has evolved into e-Training, a method of educational management aimed at providing the widest possible access to education and training for students who do not have the opportunity to attend face-to-face education due to various constraints. E-Training is a form of learning that frees participants to learn without being bound by space and time, with minimal assistance from others. In e-Training, there is no direct contact between instructors and participants; the learning process is conducted through learning media, currently mostly in the form of specially designed ICT. According to (Barrows, 2002). e-Training is defined as the use of several technological devices to deliver training and other educational materials via the internet. Distance learning or distance education has several e-learning characteristics that are often used to describe web-based education. The process can be divided into three categories, namely Computer Aided Instruction (CAI), Computer Managed Instruction (CMI), and Computer Supported Learning Resources (Barrows, 2002).

Some of the reasons and considerations behind the development and implementation of e-Training are geographical conditions, population growth and distribution, globalization challenges, improving the quality of human resources, and the development of ICT. The legal reasons for the implementation of the e-Training program have been mandated in Article 28B paragraph 1 of the 1945 Constitution that everyone has the right to develop themselves through fulfilling their basic needs, the right to receive education and benefit from science and technology, art and culture in order to improve the quality of their lives for the welfare of humanity, and Article 31 paragraph 1 that every citizen has the right to receive education. Likewise, Law No. 20 of 2003 concerning the national education system, Article 1 Paragraph 15 explains that distance education (PJJ) is education where students are separated from educators and their learning uses various learning resources through Information and Communication Technology (ICT) and other media. The implementation of e-training is often designed to be interactive, with the use of video, audio, simulations, and other interactive elements. Training participants can engage directly with training materials through exercises, assignments, or quizzes. In addition, e-Training can also provide immediate feedback and generate measurable reports on trainee progress, which can help in evaluating and improving training effectiveness (Ni'mah & Wiranti, 2024); (Lesmana et al., 2021).

The concept of training is closely related to the Andragogy approach, as a learning approach that prioritizes the principles of adult learning. (Knowles et al., 2014) believe that the application of

"new methods" in adult education activities must be based on the following principles: 1) learning to know something, 2) learner self-concept, 3) prioritizing learner experience 4) readiness to learn, 5) orientation to learn, 6) learning motivation. As a learning approach, Andragogy can be implemented with various learning modes, one of which is through e-Training. Digital Andragogy is a concept that is relevant to Andragogy in e-Training, conveyed by the opinion of Cochrane & Antonczk in (Blackley & Sheffield, 2015b) explaining the concept of digital Andragogy, namely the practice of educators to equip and encourage adult learners to choose and use accessible digital technology capabilities to personalize learning and facilitate them to interact with peers and tutors. According to Land, Cousin, Meyer & Davies, in Blackley, S., & Sheffield, R. (Blackley & Sheffield, 2015b), there are several principles that need to be considered in implementing digital Andragogy, including: 1) students are made very aware of the reasons for using the Andragogy approach, and know how it works. 2) learning modules are information/skills/strategies that encourage collaborative and reflective activities in order to build meaning and connections with prior knowledge. 3) assessment objectives consist of 3 objectives, namely assessment of learning, for learning and as learning. 4) task feedback (formative and summative) is fast, personal and provided in various different formats (written, video, and audio).

E-Training models that apply the principles of adult learning (Andragogy) are currently popular, and research results can reveal the existence of these models. Technology can strengthen and enhance adult learning, providing a learning environment with tools and resources that can be explored and controlled by learners, thus encouraging more independent and adult-centered learning (Sulistiono et al., 2023). Andragogy is a fundamental principle applied in online education. Its implementation is student-centered, experience-based, problem-oriented, and collaboration between educators and learners, (Decelle, 2016). The andragogical model places a high emphasis on adult learners' ability to direct their own learning, which in turn requires e-literacy skills. The support structure for learner competencies is supported by libraries as an important key for adult learners, (Zuckerman-Parker & Shank, 2008). The literature on andragogy and technology shows that the gap between technology and learner age can be a barrier to learning. This is seen from the perspective of andragogy and constructivism, as well as students' experiences in mastering technology, (McCann & MacMahon, 2021) and (Blackley & Sheffield, 2015a).

Based on the research findings conducted by several researchers above, it shows that Andragogy is a strategic approach in digital learning. Digital andragogy has been implemented in areas such as universities, courses or training, and learning in formal educational settings. However, the application of digital learning for adults requires several considerations based on age category, educational background, and learning experience. Regarding this research, the position of e-Training is an effort to transform knowledge and skills through a created virtual space. The e-training learning process is built on the principles of adult learning needs. The implementation of e-Training in the training system is carried out by an institution that is responsible for the learning activities. This institution is responsible for designing and preparing learning materials, managing learning activities, providing learning assistance services to training participants, administering learning activities, evaluating learning activities, determining graduation, awarding certificates, and so on. Therefore, the implementation of e-Training programs requires implementing good learning management and an appropriate learning approach, so that the expected competencies can be achieved.

Based on the research background and referring to training efforts that have been provided by both the government and certain groups and considering all the shortcomings and advantages of each, through this study the researcher examines the implementation of e-Training to improve the performance of PAUD educators in Purwakarta, Karawang, Subang and Bekasi in West Java Province. This training emphasizes learning aspects that are oriented to the principles of training implementation by utilizing information technology as a medium to facilitate access and information that occurs. The large number of units has not been balanced with adequate quality of PAUD teachers, as seen based on national data obtained from the Dapodik Directorate General of PAUD and Dikmas that more than half of non-formal PAUD teachers in Indonesia (215,516 people) especially in West Java (32,822 people) have not completed a bachelor's degree and also more than 90 percent of PAUD teachers in Indonesia are graduates of study programs other than PAUD Teacher Education. In addition, Dapodik data also shows that as many as 65.82 percent of PAUD educators in Indonesia

have not completed a bachelor's degree. This is also seen in West Java, where the majority of non-formal PAUD educators in West Java are high school graduates. Based on the data presented, it can be concluded that most PAUD educators or teachers in Indonesia do not have an educational background that can support their competence, especially pedagogical competence as professional PAUD teachers.

Thus, education and training services are one effort that can be undertaken to encourage the improvement of the competence of PAUD educators. The government has attempted to resolve the issue of PAUD educator competence. Online training programs have been implemented by the government at both the central and provincial levels. The training aims to improve the competence of PAUD educators in Indonesia. This training activity has advantages, especially in terms of funding and time effectiveness. Behind these advantages, several inhibiting factors have resulted in online training being implemented with limited targets. One reason is the limited amount of the government budget and the implementation of training programs that are not felt to touch the needs of adults. On the other hand, several problems that require immediate solutions include: The achievement of online training has not been significant, due to several obstacles including costs, participant quotas, and limited materials because participants attend at home, which tends to be subject to external distractions. Therefore, e-training is needed that prioritizes content effectiveness, namely a combination model that combines virtual meetings and face-to-face meetings that complement each other. The training has not prioritized andragogy aspects. There are several learning activities or processes that have not optimally indicated that they meet the needs of adult learners, even during online learning activities.

Some of the reasons and considerations behind the development and implementation of e-Training are geographical conditions, population growth and distribution, globalization challenges, improving the quality of human resources, and the development of ICT. The legal reasons for the implementation of the e-training program have been mandated in the 1945 Constitution, Article 28B paragraph 1, that everyone has the right to develop themselves through fulfilling their basic needs, has the right to receive education and benefit from science and technology, art and culture in order to improve the quality of their lives for the welfare of humanity, and Article 31 paragraph 1 that every citizen has the right to receive education. Likewise, Law No. 20 of 2003 concerning the national education system, Article 1 Paragraph 15 explains that distance education (PJJ) is education where students are separated from educators and their learning uses various learning resources through Information and Communication Technology (ICT) and other media. Article 40 paragraph 2, Law No. 14 of 2005, educators must have pedagogical competence, personality competence, social competence, and professional competence.

Based on these problems and referring to training efforts that have been provided by both the government and certain groups and considering all the shortcomings and advantages of each, through this study the researcher will examine the implementation of e-training to improve the performance of PAUD educators in Bekasi City, Bekasi Regency, Karawang Regency, Subang Regency and Purwakarta Regency in West Java Province. The research location is based on documentation data obtained from the West Java Provincial Education Office. This training emphasizes learning aspects that are oriented to the principles of training implementation by utilizing information technology as a medium to facilitate access and information that occurs. The competencies developed in this e-training activity are pedagogical competency, personality competency, social competency and professional competency.

Method

This study uses a Research and Development (R&D) approach to develop and validate an andragogy-based e-training model to improve the competency of PAUD educators in West Java Province. The research approach was mixed: qualitative to describe the model development process and quantitative, using an experimental design to test the effectiveness of the resulting product. The effectiveness test used a One-Group Pretest-Posttest design, in which the experimental group was first given a pre-test, then received andragogy-based e-training, and then a post-test. The model's success was determined by the difference in average scores before and after treatment. Data were analyzed using prerequisite tests in the form of normality and homogeneity, as well as a t-test to

determine the significance of differences in results, so that conclusions can be drawn regarding the effectiveness of the developed model (Creswell & Clark, 2018).

This study involved 240 early childhood education educators from five regions in West Java: Bekasi City, Bekasi Regency, Karawang, Subang, and Purwakarta. The sample was selected using a purposive sampling technique based on criteria such as technology proficiency, e-training experience, and recommendations from the Education Office. The research process was conducted in two stages: a limited trial involving 60 respondents to identify initial obstacles and inform product improvements, and a broad trial with a sample of 70 respondents, determined using the Slovin formula with a 0.1 error rate, to obtain a more representative validation model. In addition, this study involved school principals as supervisors, e-training instructors for technical evaluation, and experts as validators of the theoretical and conceptual aspects to ensure the quality and feasibility of the developed model.

This research focuses on e-training as the independent variable and the competence of PAUD educators as the dependent variable. Educator competence is measured based on four main aspects according to national standards: pedagogical, personality, social, and professional competence. Data collection was conducted comprehensively through several techniques, including observation to observe the implementation process from the initial to the final stages of the research, as well as literature and documentation studies to strengthen the theoretical foundation and systematically record all research activities. In-depth interviews were also conducted with educators, administrators, and the Education Office to obtain information regarding responses and applicable policies. Data were also obtained through a 1–5 Likert-scale questionnaire to measure respondents' perceptions of the model's effectiveness. All these procedures were designed to ensure that the developed e-training model is academically valid, empirically tested, and capable of providing a tangible impact on improving the competence of PAUD educators in the field (Sugiyono, 2020).

Results and Discussion

Overview of Early Childhood Education Teacher Competencies in Purwasukasi (Purwakarta, Subang, Karawang, Bekasi)

Based on the UKG scores of PAUD Educators in Bekasi, Karawang, Purwakarta, Subang and Bekasi City Regencies in 2022, it is known that the Competency Test scores are as shown in the following table:

Table 1. Summary of Early Childhood Education Teacher Competency Test Results

No	Code of Region	Name of Region	Level	Pedagogy	Professional	Mean
1	22200	Bekasi Regency	Kindergarten	42,04	52,54	47
2	22200	Bekasi Regency	Kindergarten	57,17	65,57	61
3	22200	Bekasi Regency	Kindergarten	44,35	51,1	48
4	22200	Bekasi Regency	Kindergarten	52,78	59,35	56
5	22200	Bekasi Regency	Kindergarten	52,79	60,03	56
6	22100	Karawang Regency	Kindergarten	56,74	65,09	61
7	22100	Karawang Regency	Kindergarten	53,45	59,72	57
8	22100	Karawang Regency	Kindergarten	55,04	60,7	58
9	22100	Karawang Regency	Kindergarten	54,35	51,1	53
10	22000	Purwakarta Regency	Kindergarten	56,77	64,85	61

11	22000	Purwakarta Regency	Kindergarten	34,36	30,95	33
12	22000	Purwakarta Regency	Kindergarten	51,86	57	54
13	22000	Purwakarta Regency	Kindergarten	53,92	60,72	57
14	22000	Purwakarta Regency	Kindergarten	53,88	59,3	57
15	21900	Subang Regency	Kindergarten	56,49	64,88	61
16	21900	Subang Regency	Kindergarten	53,35	61,1	57
17	21900	Subang Regency	Kindergarten	54,67	61,89	58
18	21900	Subang Regency	Kindergarten	54,15	60,46	57
19	21900	Subang Regency	Kindergarten	52,79	59,03	56
20	26500	Bekasi City	Kindergarten	57,06	65,68	61
21	26500	Bekasi City	Kindergarten	56,46	64,77	61
22	26500	Bekasi City	Kindergarten	53,45	59,72	57
23	26500	Bekasi City	Kindergarten	54,07	60,55	57
24	26500	Bekasi City	Kindergarten	55,63	63,5	60

Table 1 above shows the following: (1) 17 people (71%) of participants have a predicate of Less, (2) There are 7 people (29%) of participants who have a predicate of Sufficient. In addition, the Rausan Fikri Training Organizing Institution is located at Taman Tridaya Indah 2 Block H20 No. 5, Tridaya Sakti Village, Tambun Selatan District, Bekasi Regency. This institution has facilitated more than 420 PAUD educators across Purwakarta Regency, Karawang Regency, Subang Regency, Bekasi City and Bekasi Regency in equipping them through various educator training programs. After participating in the training activities, the participants will be given a certificate of graduation, which will be given to participants who have participated in the entire series of activities, and have obtained 2 (two) main components of the assessment, namely the value of the material deepening stage and the implementation of independent tasks with a minimum predicate of sufficient.

Participants who receive a certificate have the following rights: recognition as PAUD teachers who have met the criteria as young assistant teachers in their respective work areas; Using the certificate to be submitted as credit points in performance awards in the scope of duties and positions in the PAUD educator field; Using the certificate as part of evidence of career development and competency improvement as PAUD educators; The description of PAUD educator competencies studied in the Purwasukasi area aims to describe the real conditions qualitatively and quantitatively of the competencies mastered.

The competency analysis includes competencies related to learning, personality, relationships with others and professionalism. Each competency indicates the unstable condition of each educator, the varied abilities of PAUD educators require managers or principals to include their educators in training institutions. An empirical study conducted by researchers has accommodated data on PAUD educator competency before and after the implementation of the e-training model. The application of this model was carried out with 70 PAUD educators, assisted by principals or supervisors, to assess their condition before and after participating in e-training.

Procedures for the Early Childhood Education Teacher Competency e-Training Model Early Childhood Education Teacher Competencies

The competencies and indicators that PAUD teachers must have refer to Law Number 14 of 2005 concerning Teachers and Lecturers which is used as a reference for assessing PAUD teacher competencies, as follows:

In the national education standards, the explanation of Article 28, paragraph (3), states that Pedagogical competence is the ability to manage student learning, which includes understanding students, planning and implementing learning, evaluating learning outcomes, and developing students to actualize their various potentials. The pedagogical competence of PAUD educators, as stated in Law Number 14 of 2005 concerning Teachers and Lecturers, includes:

1. Mastering student characteristics
 - a) Understanding the characteristics of PAUD age students related to physical, intellectual, social-emotional, moral and socio-cultural background aspects.
 - b) Identifying the potential of PAUD-age students in various areas of development.
 - c) Identifying the initial abilities of PAUD students in various areas of development.
 - d) Identifying the difficulties of PAUD-age students in various areas of development.

2. Mastering learning theories and educational learning principles
 - a) Understand various learning theories and principles of educational play while learning related to various development areas in PAUD.
 - b) Implementing various approaches, strategies, methods and techniques for playing while learning that are holistic, authentic and meaningful and related to various development areas in PAUD.

3. Curriculum development
 - a) Understand the principles of curriculum development.
 - b) Determine the objectives of educational development activities.
 - c) Determine appropriate play-while-learning activities to achieve development goals.
 - d) Selecting educational development activity materials, namely playing while learning activities, in accordance with development objectives.
 - e) Prepare semester, weekly and daily plans for various development activities in PAUD.
 - f) Developing indicators and assessment instruments.

4. Educational development activities
 - a) Understand the principles of designing educational and enjoyable development activities.
 - b) Develop components for designing educational and enjoyable development activities.
 - c) Develop a comprehensive educational development activity plan, both for in-class and out-of-class activities.
 - d) Implementing play activities that are holistic, authentic, and meaningful
 - e) Creating a fun, inclusive and democratic playing atmosphere.
 - f) Utilizing media and learning resources that are appropriate to the play-while-learning approach.
 - g) Implementing stages of children's play in development activities in PAUD.
 - h) Taking transactional decisions in development in PAUD according to the developing situation

5. Utilizing information and communication technology for the purpose of organizing educational development activities.
 - a) Utilizing information and communication technology to improve the quality of educational development activities.

6. Developing student potential
 - a) Facilitating various play-while-learning activities to encourage students to develop their potential optimally, including their creativity.

7. Communicate effectively, empathetically, and politely with students
 - a) Understand various strategies for effective, empathetic, and polite communication, both verbally and in writing.

- b) Communicate effectively, empathetically and politely with students using distinctive language in learning interactions that are built cyclically from (1) preparing the psychological condition of students, (2) giving questions or assignments as an invitation to students to respond, (3) student responses, (4) teacher reactions to student responses and so on.
8. Assessment and evaluation of learning processes and outcomes
 - a) Understand the principles of assessment and evaluation of learning processes and outcomes according to the characteristics of various development areas in PAUD.
 - b) Determine the aspects of the learning process and outcomes that are important to assess and evaluate according to the characteristics of various development areas in PAUD.
 - c) Determine the assessment and evaluation procedures for the learning process and outcomes.
 - d) Developing assessment and evaluation instruments for learning processes and outcomes.
 - e) Administering assessments of learning processes and outcomes on an ongoing basis using various instruments.
 - f) Analyze the results of the assessment of learning processes and outcomes for various purposes
 - g) Conducting an evaluation of learning processes and outcomes.
 9. Utilizing assessment and evaluation results for learning purposes
 - a) Using assessment and evaluation information to determine learning completion.
 - b) Using assessment and evaluation information to design remedial and enrichment programs.
 - c) Communicating the results of learning assessments and evaluations to stakeholders.
 - d) Utilizing information from assessment and evaluation results to improve the quality of learning.
 10. Carrying out reflective actions to improve the quality of learning
 - a) Reflect on the learning that has been carried out.
 - b) Utilizing the results of reflection for improvement and development of various development areas in PAUD.
 - c) Conducting classroom action research to improve the quality of various development areas in PAUD.

Professional Competence

Professional competence is the ability to master subject matter broadly and deeply (Law Number 14 of 2005).

- 1) Mastery of material, structure, concepts, and scientific thought patterns that support the learning material given to students.
 - a) Mastering the basic concepts of mathematics, science, language, knowledge, social, religion, art, physical education, health and nutrition as a means of development for each development area in PAUD.
 - b) Mastering the use of various play tools to develop the physical, cognitive, social, cultural and language aspects of PAUD children.
 - c) Mastering children's games.
- 2) Mastering the basic competency standards in the development field being handled
 - a) Understanding the abilities of PAUD children in each area of development.
 - b) Understanding children's progress in each area of development in PAUD.
 - c) Understand the purpose of each development activity.
- 3) Developing learning materials that are taught creatively
 - a) Select development material that is appropriate to the development level of students.
 - b) Processing development material creatively according to the development level of students.

- 4) Developing professionalism through reflective action
 - a) Continuously reflect on your own competencies.
 - b) Utilizing the results of reflection in order to improve professionalism.
 - c) Conducting classroom action research to improve professionalism.
 - d) Follow the progress of the times by learning from various sources.

- 5) Utilizing information and communication technology to communicate and develop oneself
 - a) Utilizing information and communication technology in communicating.
 - b) Utilizing information and communication technology.

Educator competence in carrying out their roles and duties in schools, especially in the learning process in the current context, requires development and change towards a more innovative direction. The manifestation of educator competence in the learning process, namely how a teacher plans learning, carries out learning activities and assesses learning outcomes. In addition, educator competence is a manifestation of teacher competence, self-awareness, and the motivation to do tasks well and to continuously develop alongside the times. Innovative educator competence is important for the successful implementation of educational innovation in order to improve the quality of education/learning (Fathurrohman & Porter, 2012).

The competencies of early childhood education (PAUD) educators reflect their work competencies in carrying out all matters related to their duties and responsibilities as educators. To fulfill these obligations, educators must continuously develop their abilities. While educators may already fulfill the administrative requirements of their jobs, they must also follow or keep pace with educational developments relevant to the duties they hold or will hold. The increasingly rapid development of technology, information, and communication has encouraged training providers to develop new training strategies using the e-Training model. This model is suitable for providing easy and innovative material, complemented by the addition of virtual classes where instructors can interact online with trainees, much like traditional training (Fahimah et al., 2021). Therefore, the andragogy-based e-Training model can be used to enhance competencies, particularly professional competencies, as early childhood education (PAUD) educators.

The term online education and training is well known, namely the process of improving human resource competency through the internet. In other words, web-based e-Training is a means to improve competency without being limited by distance, space, and time (Sutarto, Mulyono, et al., 2019). This is different from conventional training where there are limitations in time, energy, time, and costs, so that participants' opportunities to participate in training are very minimal. In addition, conventional training cannot reach wider areas, so participants can only attend training in their area. E-Training has several characteristics, namely (1) interactive, the availability of direct and indirect communication channels, (2) independence, flexibility in terms of time, place, instructors, and teaching materials, (3) accessibility, learning resources become more easily accessible via the internet, (4) enrichment, enabling enrichment learning activities. E-Training as training that is facilitated and supported by technology to improve competency in the workplace so that it can achieve personal or organizational goals. A crucial aspect of e-Training implementation is designing and implementing a training program that addresses issues or obstacles that disrupt the primary tasks and functions of the trainees. This is because the trainees are early childhood educators with diverse needs and abilities.

Andragogy is applied because the training participants are adults with certain characteristics. The e-Training model applied must be able to connect the experiences of learners (training participants) in a case provided on the website or e-Training page. The program structure in online learning can accommodate the required information requests, and the information provided must be clear so readers can easily remember it. Therefore, the andragogy-based e-Training that will be held will include the following elements: (a) analysis of problems and training needs; (b) socialization and recruitment of training participants; (c) training planning; (d) training learning process including independent learning, assignments, unit evaluations, and mentoring; (e) comprehensive evaluation through independent assignments, with certificates awarded upon

completion; and (f) follow-up in the form of competency tests. The WBT or e-Training model developed refers to the ADDIE design which reviews the analysis of learning tasks, the environment, training participants, infrastructure, and culture. ADDIE stands for Analysis, Design, Development, Implementation and Evaluations. The ADDIE model uses five stages or development steps as shown in the following figure:

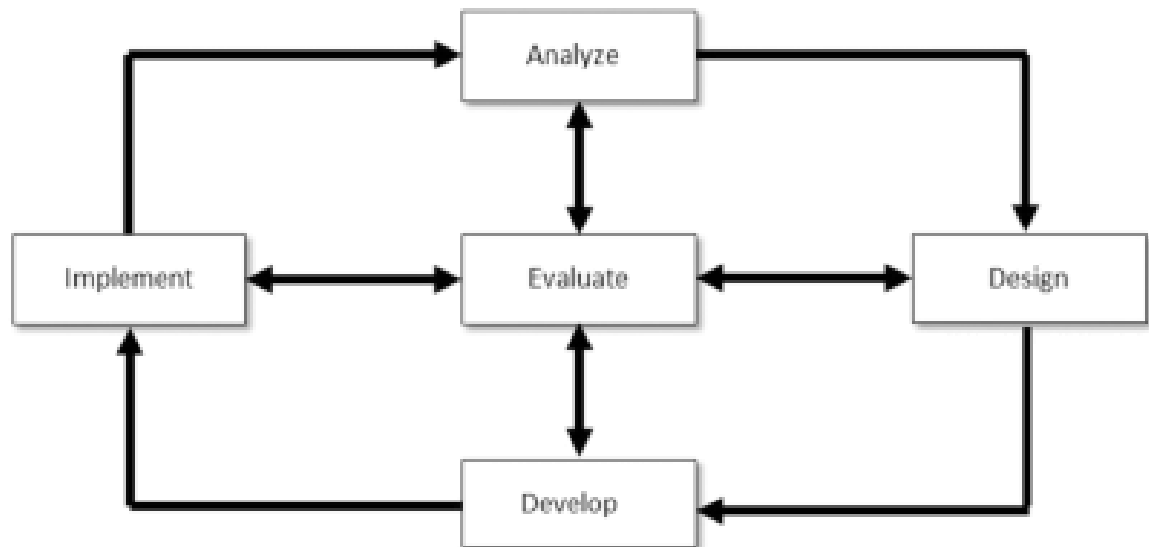


Figure 1. Components ADDIE Model (Seel et al., 2017)

Training is a systematic and positive habit that creates changes in perspective and attitudes that are better cognitively, behaviorally, and psychologically as desired by individuals or organizations. The human resource training process is one of the tools organizations use to improve the competence of early childhood education (PAUD) teachers. The excellence of early childhood education schools lies in the quality of services provided by PAUD teachers to children. Therefore, improving service quality is an important part of PAUD teacher professionalism (Firdaus & Hasanah, 2017). In efforts to improve educators' competence through training, Indonesia still faces many challenges when implemented conventionally. This is because the number of educators who need training is not proportional to the number of institutions providing it, and because human resources are limited. In addition, educators are limited in time to participate in training because they do not easily step away from teaching and learning activities at school.

Teacher training essentially provides guidance, information, experience, and skills development so they can fulfill their roles as professional teachers. In reality, many training programs are attended, but they are ineffective at improving teacher competency. Teacher capacity and understanding also remain unchanged, and teachers are unable to apply the training outcomes in their professional activities as early childhood educators (PAUD). Therefore, it is important to improve PAUD educators' capacity, especially their professional competence, through training. According to Saleh, one way to improve the quality of human resources is through education and training programs implemented in a planned, systematic manner and capable of generating positive change. The education and training provided can leverage technology, especially internet technology, as an infrastructure to support organizing self-development activities such as e-Training. The e-Training model can be used for education and training activities because participants can access them anytime, anywhere.

The e-Training model is an online training program accessible via the internet, allowing participants to learn from their respective locations. Online training allows participants to attend training without coming to the training venue in person, without leaving their jobs, with no time limits, and at their own pace. Online training is learning delivered via computer networks and the internet. Online learning activities that can be implemented include video, direct communication via chat, indirect communication via discussion forums, and electronic mail (email) (Hung et al., 2024).

Learning can be delivered through a learning system that provides independent teaching and learning services to training participants, without directly involving resource persons and speakers in the implementation process. The learning system includes the registration process, learning implementation, initial tests, assignments, final tests, and the determination of the graduation of training participants. According to (Driscoll et al., 2013) Web-based training (WBT) has several phases in implementing learning, including: a) Presenting information; b) Guiding the student in practice; c) Practicing by the student; d) Assessing the student's learning. Learning through e-Training is carried out in several phases, namely: The information-giving or presentation phase is a fundamental phase. In the learning design, it is necessary to identify students' learning needs, namely the content (material), information, and methods to be applied in learning. The organizer creates materials that meet participants' needs, so they feel motivated to participate in the e-Training. The student guidance phase is the phase of providing learning interaction needs, ensuring that students understand the concepts, principles and procedures that will be presented.

This phase includes training and practice (which will be discussed after the session). In this phase, participants are introduced to and guided in understanding the learning method. The third phase provides activities such as recalling, manipulating, and applying new knowledge. Learners must practice their new skills and knowledge to accept the information from the material they are studying. Learners study the provided modules or videos independently, then take quizzes or tests to assess their understanding. The final phase is an assessment of learner learning by answering several questions about whether the learning was effective, what the learners should do next, and what changes they experienced after participating in the e-Training (Fontanillas et al., 2016).

Conclusion

Initial conditions indicate that PAUD educators' performance, particularly in implementing learning programs, still needs improvement. The professional competence of educators is influenced by several important factors. First, educational background and training play a significant role in shaping competency. The higher the level of formal education and the more relevant the training, the better the quality of competency. Second, a deep understanding of the developmental stages and characteristics of early childhood—physical, cognitive, social, and emotional—is the primary foundation for learning practices. Third, educators must be able to design creative, varied, and child-centered learning, including selecting appropriate methods and approaches. Fourth, effective communication skills are also crucial for building positive interactions with children and fostering collaboration with parents. Fifth, professional attitudes such as responsibility, integrity, work ethic, collaborative skills, and a commitment to self-development also determine the quality of competency. Furthermore, work experience significantly enriches educators' knowledge. This research produced two products: a narrative model and a physical model in the form of an e-training platform called PAUD-Talk. For successful implementation, a platform that is easily accessible, interactive, and tailored to training needs is required. The schedule must be clear and proportional, with material presented in an engaging manner through various media and participatory activities. Technical support and interaction facilities between participants and instructors are also key factors. Through systematically designed R&D research procedures, effectiveness testing showed an increase in educator competency before and after participation in e-training. The success of the training was influenced by access to technology, motivation, digital literacy, the learning approach used, social support, and flexibility in learning time. Overall, the PAUD-Talk model has proven effective in improving the professional competency of PAUD educators.

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