

# Development of Measurement Instrument for Personality Competency of Teachers to Improve ECE Service Quality

I Wayan Gunartha<sup>1</sup>, Dewa Ayu Widiastri<sup>2</sup>, I Nengah Suka Widana<sup>3</sup>  
<sup>1,2,3</sup>(PGRI Mahadewa University of Indonesia)

## Abstract:

**Background:** During early childhood, children are subjected to rapid development through high-quality education. Furthermore, the quality of education can be enhanced by evaluating the components of early childhood education (ECE) service programs. One determining factor of ECE service quality is teachers with high personality competency. Therefore, this study aimed to evaluate the personality competency of teachers. It also developed instruments in the form of an observation sheet to measure the personality competency of teachers and improve ECE service quality.

**Materials and Methods:** This study followed a 4-step development process, including (1) initial investigation, (2) design, (3) trial, evaluation, and revision, as well as (4) implementation and dissemination. It was conducted in Badung regency, Bali province, Indonesia, and a total of 10 experts, 3 principals, and 17 teachers were involved in the content validity and readability tests. Furthermore, field trials included 85 teachers selected proportionally from each sub-district in Badung Regency. The development procedure also involved (1) instrument design preparation, (2) expert validation, and (3) field trials. Data on content validity were collected using observation sheets evaluated by experts and practitioners. Data on construct validity was collected using observation sheets filled out by principals. Data on content validity was collected through Focus Group Discussions (FGD), while data on construct validity and instrument reliability were obtained through field trials. Content validity, construct validity, and instrument reliability were analyzed using the descriptive method, Exploratory Factor Analysis (EFA), and Cronbach's Alpha, respectively.

**Results:** the results showed that the developed instrument had high content validity, construct validity, and reliability, hence, it could be used to measure the personality competency of teachers.

**Conclusion:** The instrument developed in this study is valid in terms of content and construct as well as has high reliability, hence, it can be used to measure the personality competency of teachers and improve ECE service quality.

**Key Word:** Development; Instrument; Personality Competency; Early Childhood Education.

Date of Submission: 13-06-2023

Date of Acceptance: 23-06-2023

## I. Introduction

Early childhood is widely acknowledged as a critical phase of development due to the accelerated rate of brain maturation during this period. Meanwhile, the emergence of neurons happens at an astonishing speed, approximately 50,000 to 1,000,000 per second, around 2 months after fertilization<sup>1</sup>. Brain development in children reaches 75% and 90% at the age of 2 and 10 but slows down beyond 10<sup>2</sup>. The growth of these neurons is highly dependent on the stimulation received from the environment. Improved nurturing, intervention, or stimulation provided by the environment is directly proportional to the quality of child development. In establishing a quality early learning environment, the interaction between teachers and students is crucial<sup>3</sup>. Therefore, teachers assume a crucial role in facilitating child development<sup>4</sup> and are expected to understand the characteristics of children in carrying out their roles. This understanding is not only related to teaching materials but also to the overall growth and development of children. Development is a qualitative change and emphasizes functional aspects<sup>5</sup>. Education process should be supported by quality teachers professionally trained and highly motivated. The influence on students' achievement is approximately 30%, in addition to the influence of characteristics and other factors<sup>6</sup>. Furthermore, quality teachers are expected to possess high pedagogical, professional, personality, and social competency.

The description above highlights the importance of education received by children, especially in ECE institutions. This education involves nurturing, intervention, care, affection, and appropriate activities for early childhood. The National Association for Education of Young Children (NAEYC) defined early childhood as the age range of 0-8 years. NAEYC distinguished 3 categories within early childhood, namely 0-3, 3-5, and 6-8 years. This definition shows that early childhood consists of individuals who are in the process of growth and

development. They are unique individuals with specific patterns of physical, cognitive, socio-emotional, creative, linguistic, and communicative growth and development stages<sup>5</sup>. Meanwhile, Law Number 20 of 2003 stipulated that early childhood refers to children aged 0 to 6 years. According to various experts, the period from birth to six years is regarded as an exceptionally momentous period of growth and development encompassing various dimensions, such as physical, cognitive, social, and linguistic aspects<sup>7,8</sup>.

Based on the concept above, quality ECE services are necessary to maximize child development, and education is the optimization of students' potential<sup>2</sup>. ECE is development effort for children from birth to 6 years old, provided through educational stimulation to support physical and spiritual growth. Appropriate stimulation, nutrition, and healthcare service during early childhood optimize development of all aspects in children, including physical, cognitive, language, artistic, socio-emotional, self-discipline, religious values, self-concept, and independence<sup>5,9</sup>. Therefore, ECE is the starting point for subsequent education<sup>10</sup>.

Considering the importance of education for early childhood, the Indonesian government's attention to developing ECE has grown, especially following global events such as Education for All meeting held in Dakar in 2000. Furthermore, ECE has become an important issue in the education sector worldwide and has been prioritized as a national development program. Since 2001, the Indonesian government has issued various policies, including legislation and operational technical matters, such as the establishment of ECE Directorate and the enactment of Indonesian Law Number 20 of 2003 on the National Education System. These policies have been welcomed by the community by participating in establishing ECE in cities and villages. The government only establishes 1 ECE (Pembina) in each regency, while the rest are private-owned or community-owned.

In 2009, the Ministry of National Education issued Regulation Number 58 of 2009 on ECE Standards as an integral part of the National Education Standards<sup>11</sup>. These consist of 4 standards, which are updated with the issuance of Ministry of Education and Culture Regulation Number 137 of 2014 on ECE Standards, consisting of (1) Children's development achievement level, (2) Content, (3) Process, (4) Assessment, (5) Educators and educational staff, (6) Infrastructure, (7) Management, and (8) Financing<sup>12</sup>. The preparation of these standards provides quality service that aligns with the needs of children's growth and development.

To assess the quality of ECE provision, evaluation is necessary to improve education quality. According to Cheng et al.<sup>13</sup>, the achievement of goals depends on the effectiveness of educational service provision, such as the environment and facilities, teaching skills of teachers, student counseling, and administration. Therefore, service quality is key to achieving program goals and enhancing students' abilities. Numerous studies emphasized the importance of educational institutions continuously monitoring their service quality and committing to continuously improving the concept to compete in an increasingly competitive environment.

Based on the description, it is crucial to identify the determining factors of service quality, such as facilities, competency of teachers, processes, curriculum, and lesson content. The determining factors of ECE service quality are incorporated in the standards, as described above. One determining factor of service quality included in the standards is competency of teachers. These competencies are part of the standards for educators and educational staff. According to Indonesian Law Number 14 of 2005, 4 competencies should be mastered, namely pedagogical, social, personality, and professional. Mastery of these competency affects quality of performance of teachers. Hastuti et al.<sup>14</sup> showed a relationship between professional competency of teachers and their performance in line with Fauth et al.<sup>15</sup>.

Personality competency is the ability to reflect good, positive, mature, wise, stable, and morally upright characteristics. It refers to how teachers as educators act under legal, religious, social, and cultural norms. This competency is highly important to be mastered by teachers as they serve as role models for students. Additionally, the personality competency of teachers can significantly influence the success of classroom learning. Teachers with good personalities can effectively manage the classroom, especially when interacting with students. Psychologically, students are likely to exhibit greater motivation in paying attention to and adhering to instructions imparted by teachers possessing commendable character traits.

According to the Indonesian Minister of National Education Regulation Number 58 of 2009 on Competency Standards for ECE Teachers, there are 3 sub-competencies as follows:

- a. Behaving and acting according to the psychological needs of children.
- b. Behaving and acting according to the religious, cultural, and belief norms of children.
- c. Presenting oneself as a person of noble character.

Each sub-competency is developed into several indicators as guidelines and examples of personality competency referred to by ECE teachers. Therefore, teachers are not only responsible for ensuring academic excellence among students but also for developing their characters and personality. Additionally, mastery of a healthy and integral personality competency facilitates teachers in implementing the learning process and interacting with students. Fundamentally, pedagogical, professional, and social competency are derived from

and dependent on their personality. In the process of teaching and interacting with students, teachers are greatly influenced by their characteristics.

Teachers are professionals entrusted with the task of developing students' personality known as their characters. Adequate mastery of personality competency by teachers greatly assists in the effort to develop students' character. In society, the personality of teachers is considered more sensitive compared to their pedagogical or professional competency. The community tends to react swiftly when teachers engage in reprehensible actions or violate prevailing societal norms. This can lead to a decline in the authority of teachers and the trust of the community in the school institution.

Evaluation is necessary to assess the level of competency of teachers because it is a component of ECE service program. Furthermore, it is a fundamental component in building quality service and supports individual learning<sup>16</sup>. Moscoso et al.<sup>17</sup> stated that the purpose of program evaluation is to assess the value of a specific program or its components. According to Arora et al.<sup>18</sup>, it is defined as a "systematic investigation to determine the success of a particular program." A good program evaluation should be conducted comprehensively. Similarly, Thomas<sup>19</sup> stated that human service institutions are responsible for improving service provision systems through program evaluation. Based on the above description, it can be concluded that the concept is crucial for improving ECE service.

To conduct an evaluation, the presence of a valid and reliable instrument is necessary. The validity of instrument is intrinsically tied to its capacity to accurately assess the intended construct or phenomenon<sup>20</sup>. According to Cook & Beckman<sup>21</sup>, validity refers to "the extent to which evidence and theory support the interpretations of test scores entailed by the proposed uses of tests." Furthermore, reliability is related to the level of consistency in measurement outcomes of instrument. It is also referred to as the stability of scores generated by instrument over time or across assessors<sup>22</sup>. By measuring personality competency of teachers using a valid and reliable instrument, accurate data about their personality can be obtained.

Based on a study on ECE, service quality is not maximized. For example, Neldawati & Yaswinda<sup>23</sup> in a kindergarten in Sijunjung Sub-district, West Sumatra, Indonesia found that the human resources of teachers are still lacking, and some have educational backgrounds from senior high school instead of ECE major. Some ECE still lacks complete facilities and infrastructure due to limited finances. There is also 1 ECE, consisting of 1 principal and 2 teachers doubling as administrative staff. Agustina & Retnowati<sup>24</sup> in Trucuk Sub-district, Klaten Regency, Central Java, Indonesia stated that out of 44 ECE teachers studied, only 8 were graduates with a bachelor's degree, while 32 were graduates of senior/vocational high school, and 4 graduated from junior high school.

Nurdin & La Ode Anhusadar<sup>25</sup> in the Nur'ain Playgroup in South Mola, South Wangi-wangi Sub-district, Wakatobi Regency, Southeast Sulawesi, Indonesia found that the implementation of ECE programs is not fully under the standards. Planning and preparation of semester programs and daily activities are carried out by teachers by copying from purchased books. The activities are still teacher-centered, emphasizing cognitive learning for children. The teaching methods are not yet under ECE standards. The pedagogical competency of teachers at Al-Muttaqin Sungai Duren Kindergarten in assessing early childhood learning does not adhere to assessment principles. This happens due to their lack of understanding regarding pedagogical competency<sup>26</sup>.

A comprehensive evaluation has not been conducted for all existing components. Utami et al.<sup>27</sup> who examined the management of ECE institutions in Serang Regency, West Java, Indonesia, stated that the existing curriculum has not been evaluated. Similarly, Dwi Kinasih et al.<sup>28</sup> stated that teachers assess daily activities in general without specific evaluation of individual events and development. This contradicts the principles of the 2013 Curriculum, which require detailed and comprehensive assessment.

Personality competency of teachers has not received attention from the government, despite the importance of mastery. In reality, efforts to develop this competency are still limited and tend to prioritize development of pedagogical and academic competency. Government policies regarding teacher's competency tests and performance evaluations emphasize the mastery of pedagogical and academic competency. Due to the individual nature and personal responsibility associated with development and enhancement of personality competency, as well as the absence of measurement instrument, an assessment of personality competency of teachers has not been undertaken.

Several studies have developed instruments, but none have measured ECE personality competency of teachers. Some studies on instrument development were carried out, such as Kurniawati et al.<sup>29</sup> on development of a moral intelligence instrument. Furthermore, instrument for assessing the achievement of early childhood development was developed by Gunartha et al.<sup>9, 30</sup>. Ahmad et al.<sup>31</sup> also developed instrument to measure quality of teaching, learning, and assessment in ECE, tailored to the Malaysian context. Since there is no measurement instrument for personality competency of teachers, it is crucial to develop a valid and reliable instrument for evaluation.

This study develops a valid, reliable, and practical measurement instrument for ECE personality competency of teachers. The results will be useful for ECE principals and stakeholders to evaluate personality

competency of teachers. By analyzing validity and reliability, this instrument can be used to obtain accurate data on the variable. Good personality competency of teachers can also affect ECE service quality. The evaluation results can be used to conduct further coaching to improve service quality.

## **II. Material And Methods**

This study aimed to develop a product in the form of measurement instrument for ECE personality competency of teachers. Instrument development consisted of 4 stages, namely (1) initial investigation, (2) design, (3) trial, evaluation, and revision, as well as (4) implementation and dissemination, which were modifications of the 10 stages from the Borg & Meredith Damien Gall model<sup>32</sup>.

### ***Development Stages***

During the initial investigation stage, a preliminary survey was conducted in 20 ECE in Badung Regency, Bali Province, Indonesia, regarding the evaluation activities of ECE service programs. The study also reviewed evaluation models, theories on ECE, and relevant analysis. In the design stage, measurement instrument model was designed based on the Indonesian Ministry of National Education Regulation Number 58 of 2009 on ECE Standards.

In the trial, evaluation, and revision stage, the developed instrument was tested in PAUD institutions in Badung Regency, Bali Province, Indonesia. The instrument was trialed through focus group discussion (FGD) involving 10 experts and a readability test with 3 principals and 17 teachers. It assessed the clarity of instructions, content coverage/indicators (content validity), the language used, and writing style. Based on the feedback received through the FGD and readability test, revisions were made to instrument draft, and instrument was field-tested to assess its validity and reliability.

### ***Development Procedure***

Development of instrument model was according to the following procedure:

### ***Expert Validation***

The prepared instrument was validated by experts, including academics, practitioners, and instrument users represented by lecturers, teachers, and principals/vice principals. Meanwhile, the expert validation process used the FGD model, which was conducted in 2 stages, involving 10 experts (lecturers), and 17 principals and teachers, as shown in Tables 1 and 2 below.

**Table 1:** List of Experts in FGD

No.	Areas of Expertise	Position	Sum
1.	Measurement Expert	Lecturer	2
2.	Evaluation Expert	Lecturer	3
3.	Education Management Expert	Lecturer	1
4.	Basic Education Expert	Lecturer	2
5.	ECE Expert	Lecturer	2
Sum			10

The readability test used 3 principals and 17 teachers. After the test, it was followed by an FGD, and the list of participants is shown in Table 2 below.

**Table 2:** Readability Test Participants

No.	ECE name	Principal	Number of Teachers	Total
1.	Pembina Badung State Kindergarten	1	4	5
2.	Pembina Abiansemal State Kindergarten	1	4	5
3.	Pradnyandari I Kerobokan Kindergarten	1	9	10
Total Number		3	17	20

The instrument was revised based on the input obtained from the FGD and the readability test. In the readability test, an assessment of the effectiveness and practicality of the instrument was also carried out by teachers and principals. The initial draft of the revised instrument was piloted in several ECE to determine its construct validity and reliability.

### ***Test Subjects***

The test subjects or respondents consisted of 85 teachers taken from 18 ECE in Badung Regency, Bali Province, Indonesia. Competency were assessed by principals using the developed instrument, and this study

was conducted from June to December 2022. In determining the sample, ECE was taken proportionally and randomly from each sub-district in Badung Regency. Teachers in ECE representing the Sub-district were taken as the sample, as shown in Table 3 below.

**Table 3:**Distribution of Test Subjects

No.	Sub-district	Sample	
		Principals	Teachers
1	Petang	2	8
2	Abiansemal	4	19
3	Mengwi	4	16
4	North Kuta	3	16
5	Kuta	2	10
6	South Kuta	3	16
	Sum	18	85

**Data Collection Instrument**

Data collection for content validity employed observation sheets filled out by experts, principals, and teachers. Data for construct validity and instrument reliability were also collected using observation sheets filled out by principals. Development of instrument was based on the Indonesian Ministry of National Education Regulation number 58 of 2009 on ECE Standards. Personality competency consisted of 3 sub-competency, namely:

- a. Behaving and acting according to the psychological needs of children.
- b. Behaving and acting under the religious, cultural, and belief norms of children.
- c. Presenting oneself as a person of noble character.

Each sub-competency had several indicators to be developed into instrument items in the form of observation sheets. The first, second, and third factors were developed into 11, 3, and 4 items, resulting in a total of 18. Additionally, observation sheets were prepared to gather data on instruction clarity, indicator coverage, language usage, and the writing style of the developed instrument.

**Data Collection Technique**

This study required data on the content validity and accuracy of the developed instrument to measure construct validity and instrument reliability. The first data was collected using the FGD technique. Experts, principals, and teachers also evaluated the developed instrument using the prepared instrument. The second data was collected through field trials involving 85 teachers. In addition, the organized instrument was used by principals to assess performance of teachers related to personality competency. In this study, the principals observed teachers during lesson planning, classroom implementation, assessment of children's development, and utilization of assessment results.

**Data Analysis Technique**

The data were analyzed using qualitative descriptive and quantitative analyses.

*Qualitative Descriptive Analysis:*

Qualitative descriptive analysis was employed to analyze the validation data from experts, principals, and teachers. The data collection instrument was assessed in terms of instruction clarity, indicator clarity, and language usage. Based on the scores, the average was calculated and converted to a 5-point scale, which was then described. The resulting descriptions served as the basis for determining the adequacy of the instrument. The conversion of quantitative data to qualitative data using a 5-point scale followed rules similar to Table 4 as shown below.

**Table 4:** Convert Quantitative Data to Qualitative Data

Formula	Average Score	Qualification
$X > Mi + 1.8 Sbi$	$> 4.2$	Excellent
$X > iM + 0.6 Sbi - Mi + 1.8 Sbi$	$> 3.4 - 4.2$	Good
$X > iM - 0.6 Sbi - Mi + 0.6 Sbi$	$> 2.6 - 3.4$	Good Enough
$X > iM - 1.8 Sbi - Mi 0.6 Sbi$	$> 1.8 - 2.6$	Not Good
$X \leq Mi - 1.8 Sbi$	$\leq 1.8$	Bad

Description:

$iM$  (Ideal Mean) =  $1/2$  (Ideal maximum score + ideal minimum score)

=  $1/2$  (5 + 1) = 3

$iSB$  (Ideal standard deviation) =  $1/6$  (Ideal maximum score – ideal minimum score)

$$= 1/6 (5 - 1) = 0.67$$

X = Empirical mean score.

Based on the average score and classification of development results, an assessment of instrument was carried out as shown in Table 5 below.

**Table 5: Judging Criteria**

Average score	Qualification	Conclusion
> 4.2	Excellent	Can be used as an example
> 3.4 – 4.2	Good	Can be used without revision
> 2.6 – 3.4	Good enough	Can be used with minor revision
> 1.8 – 2.6	Good less	Can be used with major revision
≤ 1.8	Bad	Not yet usable

Quantitative analysis was employed to analyze the validity and reliability of the developed instrument. The quantitative technique used was exploratory factor analysis (EFA), where 2 considerations should be taken into account. First, the correlation matrix should not be defective, as indicated by the statistical significance value of Bartlett's Test of Sphericity with a significance level of  $\leq 0.05$ <sup>33</sup>. Second, it should be suitable for factor analysis, as indicated by the Kaiser-Meyer-Olkin (KMO) value of  $\geq 0.5$ <sup>34, 35</sup>. This test was used as an initial test to determine the effect of available data on several factors. There were 2 criteria used to determine whether an item was considered valid or not for an instrument. First, the correlation coefficient of each item with its common factor should be at least 0.5<sup>33</sup>. Second, the measuring items should be unidimensional in trait.

In this study, instrument reliability was analyzed using Cronbach's Alpha formula<sup>36</sup>. There was no consensus on the minimum threshold value of alpha for instruments. Typically, a minimum alpha value of 0.7 has been considered acceptable, while some studies acknowledged a threshold of 0.6<sup>33, 37</sup>. Instrument reliability was calculated for each factor because the teacher's competency variable consisted of 3 factors. The analysis processes were conducted using SPSS 17.0 for Windows software and the composite reliability was calculated using the following formula.

$$r_{gg'} = 1 - \frac{\sum \sigma_j^2 - \sum (\sigma_j^2 \cdot r_{jj})}{\sum \sigma_j^2 + 2(\sum \sigma_i \sigma_j \cdot r_{ij})}$$

**Description:**

$R_{gg'}$  = reliability coefficient

$\sigma_j^2$  = variance of the jth factor

$\sigma_i$  = standard deviation of the ith factor

$r_{jj}$  = reliability coefficient of the jth factor

$r_{ij}$  = correlation coefficient between factors<sup>38</sup>

**III. Result**

**Expert Validation and Readability Test Results**

The average score for the assessment results of the content validity and clarity of instrument by experts and practitioners can be seen in Table 6 in the third column on the left below.

**Table 6: Assessment Results by Experts and Practitioners**

No.	Assessment Aspects	Evaluator & Average Score	
		Experts	Practitioners
1.	Clarity of instrument instructions	4.1	4.2
2.	Clarity and completeness of indicators	4.1	4.4
3.	Suitability of indicators with items	4.0	4.3
4.	Use of Indonesian: Clarity of statement sentences	4.0	4.2
5.	Clarity of meaning of words and terms	4.0	4.4
6.	Spelling and punctuation accuracy	4.1	4.3
7.	Font shape and size	4.2	4.5
Average Amount		28.5	30.3
Total Average		4.07	4.33

Final Average	4.2
---------------	-----

Assessment of instrument clarity focused on the same aspects as evaluated by the experts. The results obtained by teachers and principals can be seen in the third column on the right side of Table 6 above, while the final average can be observed in Table 6.

**Construct Validity and Reliability Test Results**

Validity and reliability tests were carried out through field trials. The examination of construct validity was conducted using EFA and its reliability was calculated using the internal consistency technique by examining Cronbach's Alpha coefficient. According to Table 7, the results indicated a Kaiser-Meyer-Olkin (KMO) value of 0.812 (excellent). Additionally, Bartlett's test of Sphericity was significant (sig < 0.05), indicating that the data were suitable for factor analysis, as shown in the following Table 7.

**Table 7: Kaiser-Meyer-Olkin Values of Sampling Adequacy**  
**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	983.608
	df	153
	Sig.	.000

Based on the analysis, all items were stated to be valid for measuring the factor because they had a factor loading above 0.5. The lowest and highest factor loadings were 0.623 and 0.859, as shown in Table 8 below.

**Table 8: Factor Loading for Each Item**  
**Rotated Component Matrix<sup>a</sup>**

	Component		
	1	2	3
X1	.741		
X2	.846		
X3	.765		
X4	.761		
X5	.631		
X6	.623		
X7	.728		
X8	.665		
X9	.676		
X10	.677		
X11	.742		
X12			.832
X13			.823
X14			.859
X15		.752	
X16		.820	
X17		.828	
X18		.833	

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

The analysis results showed that the first, second, and third factors had variances of 32.998%, 17.582%, and 14.151%, respectively. The cumulative factor loading obtained was 64.73%, hence, this personality competency instrument cumulatively explained the theoretical dimensions of 64.73%. The reliability analysis showed that the first, second, and third factors had an Alpha coefficient of 0.916, 0.839, and 0.866 with composite reliability of 0.945, respectively. A recapitulation of the validity and reliability analysis is shown in Table 9 below.

**Table 9: Recapitulation of Validity and Reliability Analysis Results**

Instrument	KMO	Factor Loading		Fallen items	Total Variance	Coefficient Alpha
		Lowest	Highest			

Personality competency	0.812	0.623	0.859	-	64.73%	0.945
------------------------	-------	-------	-------	---	--------	-------

#### IV. Discussion

Based on Table 6, the average scores given by the experts and practitioners for the developed instrument are 4.07 and 4.33, respectively, resulting in a final average of 4.2. This assessment is based on the clarity of instructions, the completeness of indicators (content validity), the clarity of statements, the meaning of words and terminology, spelling and punctuation accuracy, as well as font shape and size. According to the guidelines in Table 5, instrument developed is considered excellent and can serve as an example without revision, as evaluated by the experts and practitioners. This is attributed to the comprehensive study conducted on the theory and indicators of the Minister of National Education Regulation Number 58 of 2009. Additionally, instrument preparation follows established principles and consults with various experts, including ECE, evaluation, and language experts. Validity also represents the ability of instrument to measure a variable<sup>29, 39</sup>. This means that the instrument developed accurately measures ECE personality competency of teachers in terms of content.

After the instrument is deemed valid in terms of content, it is analyzed to assess its construct validity. Instrument is tested using 85 respondents selected from 18 ECE located in 6 Sub-districts in the Badung Regency, Bali Province, Indonesia. The construct validity analysis employs EFA technique after considering two factors. First, the correlation matrix produced should not be defective, as indicated by the statistical value of Bartlett's Test of Sphericity with a significance level of  $\leq 0.05$ <sup>33</sup>. Second, it should be suitable for factor analysis, as indicated by a Kaiser-Meyer-Olkin (KMO) value of  $\geq 0.5$ <sup>34, 35</sup>. Based on Table 7, which presents the initial results, the data is suitable for factor analysis. This is evidenced by a KMO value of 0.812 (excellent) and Bartlett's test of Sphericity yielded a significant result ( $\text{sig} < 0.05$ ).

Based on the results, all items have a factor loading above 0.5 with the lowest and highest at 0.623 and 0.859. The analysis shows that the first, second, and third factors account for variances of 32.998%, 17.582%, and 14.151%, respectively. The cumulative factor loading obtained is 64.73%, indicating that this personality competency instrument can cumulatively explain 64.73% of the theoretical dimensions. Furthermore, the reliability analysis states that the first, second, and third factors have an Alpha coefficient of 0.916, 0.839, and 0.866, with a composite reliability of 0.945, respectively.

In evaluation, instruments play a crucial role in generating accurate data. A valid and reliable instrument provides accurate information about the evaluated object. The results demonstrate that the developed instrument is excellent in terms of content validity, construct validity and reliability. Content validity refers to the adequacy of instrument's content concerning the quantity and scope of the questions<sup>30</sup>. This indicates that instrument developed is sufficiently good in terms of content. Furthermore, construct validity refers to the extent to which instrument measures the trait or theoretical constructs to be measured<sup>22</sup>. The results show that all items have a factor loading above 0.5. Reliability is the consistency level of measurement results in instrument. Internally, it refers to the extent to which items are related to each other and the stability of measurement results under unchanged conditions<sup>40</sup>. Instrument developed has very good construct validity used by ECE principals or stakeholders to evaluate competency of teachers. The obtained reliability coefficient of 0.945 indicates that the instrument has very high reliability.

One general principle of evaluation is that the concept should be conducted comprehensively<sup>41</sup>. With the existence of the instrument, personality competency of teachers can be evaluated with other components. Evaluation is focused on development level of children to assess all aspects of education, such as educators, curriculum, processes, and teaching methods<sup>42</sup>.

ECE service is improved by conducting a comprehensive and continuous evaluation. Megalonidou<sup>43</sup> demonstrated that quality of childcare centers has a significant influence on the direct and long-term development of children. Quality of nurturing during the first 3 years of life influences cognitive skills, language, school readiness, as well as social and emotional development. This highlights the importance of assessing and enhancing the quality of childcare centers. According to Aboubakr & Bayoumy<sup>44</sup>, all educational institutions strive to achieve and maintain high-performance standards to remain competitive. Furthermore, ensuring educational quality is essential for institutional sustainability. Based on these opinions, ECE service quality should be enhanced due to the positive implications for child development and improved institutional competitiveness. Quality improvement can also be achieved through comprehensive and continuous evaluation.

#### V. Conclusion

Based on the results, the following conclusions were drawn. First, measurement instrument for ECE personality competency of teachers was valid in content and construct. Second, the instrument also had high reliability used to measure personality competency of teachers to improve ECE service quality.

#### References



- [1] Wollfolk AE, And NicolichLM. *Educational Psychology For Teachers*, 2nd Ed. New Jersey: Prentice-Hall Inc, 1984.
- [2] Susanti SE. "Pembelajaran Anak Usia Dini Dalam Kajian Neurosains," *TRILOGI J. Ilmu Teknol. Kesehatan, Dan Hum.*, Vol. 2, No. 1, Pp. 53–60, Sep. 2021, Doi: 10.33650/Trilogi.V2i1.2785.
- [3] Hatton-Bowers H. Et Al., "Promising Findings That The Cultivating Healthy Intentional Mindful Educators' Program (CHIME) Strengthens Early Childhood Teachers' Emotional Resources: An Iterative Study," *Early Child. Educ. J.*, No. 0123456789, 2022, Doi: 10.1007/S10643-022-01386-3.
- [4] Nur L, StephaniMR., And MalikAA. "Teachers' Perspectives On Promoting Physical Activity In Early Childhood Education: A Pilot Study In Indonesia," *Int. J. Hum. Mov. Sport. Sci.*, Vol. 10, No. 6, Pp. 1189–1196, Dec. 2022, Doi: 10.13189/Saj.2022.100609.
- [5] YolandaE. "Professional And Pedagogical Competence Of Early Childhood Education Teachers In Millennial Era," In *Proceedings Of The International Conference Of Early Childhood Education (ICECE 2019)*, 2020, Vol. 449, No. 19, Pp. 66–70. Doi: 10.2991/Assehr.K.200715.013.
- [6] SukirmanD, SetiawanB, And RiyanaC. "Development Of Massive Open Online Courses (MOOC) Content To Improve Indonesian Teachers' Pedagogical Competence: MOOC Technology Instructional Process," *Acad. J. Interdiscip. Stud.*, Vol. 11, No. 6, Pp. 255–270, Nov. 2022, Doi: 10.36941/Ajis-2022-0166.
- [7] LafaveL, WebsterA. D, And McconnellC. "Impact Of COVID-19 On Early Childhood Educator's Perspectives And Practices In Nutrition And Physical Activity: A Qualitative Study," *Early Child. Educ. J.*, Vol. 49, No. 5, Pp. 935–945, Sep. 2021, Doi: 10.1007/S10643-021-01195-0.
- [8] GoldfieldGS, HarveyA, GrattanK, And AdamoKB. "Physical Activity Promotion In The Preschool Years: A Critical Period To Intervene," *Int. J. Environ. Res. Public Health*, Vol. 9, No. 4, Pp. 1326–1342, Apr. 2012, Doi: 10.3390/Ijerp9041326.
- [9] GunarthaIW, SulaimanT, SuardimanSP, And KartowagiranB. "Developing Instruments For Measuring The Level Of Early Childhood Development," *Res. Eval. Educ.*, Vol. 6, No. 1, Pp. 1–9, Jun. 2020, Doi: 10.21831/Reid.V6i1.21996.
- [10] ZhanZ, And FanA. "How To Promote Quality And Equity Of Early Childhood Education For Sustainable Development In Undeveloped Rural Areas Of China: An Evolutionary Game Study," *Sustainability*, Vol. 14, No. 24, P. 16438, Dec. 2022, Doi: 10.3390/Su142416438.
- [11] "Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 58 Tahun 2009 Tentang Standarpendidikan Anak Usia Dini," Pp. 1–28, 2009, [Online]. Available: [https://Simpuh.Kemenag.Go.Id/Regulasi/Permendiknas\\_58\\_09.Pdf](https://Simpuh.Kemenag.Go.Id/Regulasi/Permendiknas_58_09.Pdf)
- [12] Kementrian Pendidikan Nasional RI, "Peraturan Menteri Pendidikan Dan Kebudayaan RI No. 137 Anak Usia Dini No 137 Tahun 2014," Peratur. Menteri Pendidik. Dan Kebud. Republik Indones., Pp. 1–76, 2014, [Online]. Available: <https://Repositori.Kemdikbud.Go.Id/12860/1/Permendikbud.No.137.Tahun.2014-SN-PAUD.Pdf>
- [13] ChengCC, TsaiMC, And Lin CL. "Quality Education Service: Put Your Feet In Their Shoes," *Curr. Issues Tour.*, Vol. 19, No. 11, Pp. 1120–1135, Sep. 2016, Doi: 10.1080/13683500.2013.839633.
- [14] HastutiTA, SoegiyantoS, SuhermanWS, RahayuS, And UtamiNS. "Improving The Pedagogic Competence Of Physical Education Teachers," *J. Cakrawala Pendidik.*, Vol. 41, No. 2, Pp. 377–387, May 2022, Doi: 10.21831/Cp.V41i2.48231.
- [15] Fauth B Et Al., "The Effects Of Teacher Competence On Student Outcomes In Elementary Science Education: The Mediating Role Of Teaching Quality," *Teach. Teach. Educ.*, Vol. 86, P. 102882, Nov. 2019, Doi: 10.1016/J.Tate.2019.102882.
- [16] DonnellyC, ShulhaL, KlingerD, And LettsL. "Using Program Evaluation To Support Knowledge Translation In An Interprofessional Primary Care Team: A Case Study," *BMC Fam. Pract.*, Vol. 17, No. 142, Pp. 1–14, 2016, Doi: 10.1186/S12875-016-0538-4.
- [17] MoscosoSC, ChavesSS, VidalMP, And Teresa Anguera ArgilagaM. "Reporting A Program Evaluation: Needs, Program Plan, Intervention, And Decisions," *Int. J. Clin. Heal. Psychol.*, Vol. 13, No. 1, Pp. 58–66, 2013, Doi: 10.1016/S1697-2600(13)70008-5.
- [18] AroraPG, ConnorsEH, BlizzardA, CobleK, GloffN, And PruittD. "Dissemination And Implementation Science In Program Evaluation: A Telemental Health Clinical Consultation Case Example," *Eval. Program Plann.*, Vol. 60, Pp. 56–63, 2017, Doi: 10.1016/J.Evalprogplan.2016.09.003.
- [19] ThomasN. "An Analysis Of Program Evaluation Course Content In CSHSE–Accredited Human Services Baccalaureate Programs," *Stud. Educ. Eval.*, Vol. 59, No. June, Pp. 187–194, 2018, Doi: 10.1016/J.Stueduc.2018.08.001.
- [20] Barros AhrensR De, Silva LiraniLda, And De FranciscoAC. "Construct Validity And Reliability Of The Work Environment Assessment Instrument WE-10," *Int. J. Environ. Res. Public Health*, Vol. 17, No. 20, P. 7364, Oct. 2020, Doi: 10.3390/Ijerp17207364.
- [21] Cook DA, And BeckmanTJ. "Current Concepts In Validity And Reliability For Psychometric Instruments: Theory And Application," *Am. J. Med.*, Vol. 119, No. 2, Pp. 166.E7-166.E16, Feb. 2006, Doi: 10.1016/J.Amjm.2005.10.036.
- [22] BolarinwaO. "Principles And Methods Of Validity And Reliability Testing Of Questionnaires Used In Social And Health Science Researches," *Niger. Postgrad. Med. J.*, Vol. 22, No. 4, P. 195, 2015, Doi: 10.4103/1117-1936.173959.
- [23] Neludawati N, And YaswindaY. "Evaluasi CIPP Penerapan Permendikbud 137 Dan 146 Tahun 2014 Di Kecamatan Sijunjung," *J. Obs. J. Pendidik. Anak Usia Dini*, Vol. 6, No. 4, Pp. 2954–2961, Feb. 2022, Doi: 10.31004/Obsesi.V6i4.2066.
- [24] Agustina A, And RetnowatiTH. "Evaluasi Pelaksanaan Pembelajaran Program Pendidikan Anak Usia Dini (Paud) Di Kecamatan Trucuk Kabupaten Klaten," *J. Eval. Pendidik.*, Vol. 1, No. 2, Pp. 128–140, 2013.
- [25] Nurdin N, And AnhusadarLO. "Evaluasi Pelaksanaan Standar Proses Di Satuan Pendidikan Anak Usia Dini," *J. Obs. J. Pendidik. Anak Usia Dini*, Vol. 4, No. 2, P. 982, Mar. 2020, Doi: 10.31004/Obsesi.V4i2.485.
- [26] Mundia K, And HeruS. "Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini Kompetensi Pedagogik Guru Dalam Melaksanakan Penilaian Pembelajaran Anak Usia Dini Abstrak," Vol. 4, No. 2, Pp. 900–912, 2020, Doi: 10.31004/Obsesi.V4i2.478.
- [27] UtamiWYD, JamarisM, And MeilanieSM. "Evaluasi Program Pengelolaan Lembaga PAUD Di Kabupaten Serang," *J. Obs. J. Pendidik. Anak Usia Dini*, Vol. 4, No. 1, P. 67, Oct. 2019, Doi: 10.31004/Obsesi.V4i1.259.
- [28] Dwi KinasihA, AmaliaF, And PriyambadhaB. "Pengembangan Sistem Evaluasi Pembelajaran PAUD (Studi Kasus Di PAUD Seruni 05 Kota Malang) Ardhani," *J. Pengemb. Teknol. Inf. Dan Ilmu Komput.*, Vol. 2, No. 3, P. 1027, 2018, [Online]. Available: <http://J-Ptiik.Ub.Ac.Id>
- [29] Kurniawati Y. Et Al., "Instrumen Kecerdasan Moral Untuk Anak : Validitas Dan Reliabilitas," Vol. 6, No. 3, Pp. 1677–1689, 2022, Doi: 10.31004/Obsesi.V6i3.1803.
- [30] VenancioSI, BortoliMC, FriasPG, GiuglianiERJ, AlvesCRL, And SantosMO. "Development And Validation Of An Instrument For Monitoring Child Development Indicators," *J. Pediatr. (Rio. J.)*, Vol. 96, No. 6, Pp. 778–789, 2020, Doi: 10.1016/J.Jped.2019.10.008.
- [31] AhmadH, MamatN, Che MustafaM, And Iryani Mohd Yusoff S. "Validating The Teaching, Learning, And Assessment Quality Of Malaysian ECCE Instrument," *Int. J. Eval. Res. Educ.*, Vol. 10, No. 1, P. 135, Mar. 2021, Doi: 10.11591/Ijere.V10i1.20857.
- [32] Borg WR, And Meredith Damien Gall. *Educational Research: An Introduction*, Forth Edit. New York And London: Longman,

- 1983.
- [33] HairJF, BlackWC, BabinBJ, AndersonRE, And TathamRL. *Multivariate Data Analysis*, 6th Ed. New Jersey: Pearson Education Inc, 2006.
- [34] NorusisMJ. *SPSS/PC+ V 3.0: Advanced Statistics Update Manual For The IBM PC/XT/AT And PS/2*. Chicago: SPSS Inc, 1988.
- [35] SantosoS. *Statistik Multivariat: Konsep Dan Aplikasi Dengan SPSS*. Jakarta: PT. Elex Media Komputindo, 2010.
- [36] Nogueira KSC, And FernandezC. "THE RELIABILITY OF AN INSTRUMENT TO MEASURE TEACHER KNOWLEDGE FROM THE PERSPECTIVE OF LEARNERS IN THE CONTEXT OF PIBID," *Probl. Educ. 21st Century*, Vol. 76, No. 1, Pp. 69–86, Feb. 2018, Doi: 10.33225/Pec/18.76.69.
- [37] Kaplan RM. And SaccuzzoDP. *Psychological Testing: Principles, Applications, And Issues*, 7th Ed. United States: Wadsworth Language Learning, 2009.
- [38] AzwarS. *Reliabilitas Dan Validitas*. Yogyakarta: Pustaka Pelajar, 2013.
- [39] QuansahF. "THE USE OF CRONBACH ALPHA RELIABILITY ESTIMATE IN RESEARCH AMONG STUDENTS IN PUBLIC UNIVERSITIES IN GHANA.," *Africa J. Teach. Educ.*, Vol. 6, No. 1, Pp. 56–64, 2017.
- [40] FengYS, KohlmantT, Janssen MF, And BuchholzI. "Psychometric Properties Of The EQ-5D-5L: A Systematic Review Of The Literature," *Qual. Life Res.*, Vol. 30, No. 3, Pp. 647–673, 2021, Doi: 10.1007/S11136-020-02688-Y.
- [41] MillerMD, Linn RL, And GronlunnNE. *Measurement And Assessment In Teaching*, 10th Ed. New Jersey: Pearson Educational Ltd., 2009.
- [42] HandokoH, And WuradjiW. "Evaluasi Program Pendidikan Dan Pengembangan Anak Usia Dini (PPAUD) Di Kabupaten Kulon Progo," *J. Pendidik. Dan Pemberdaya. Masy.*, Vol. 2, No. 1, Pp. 24–38, Mar. 2015, Doi: 10.21831/Jppm.V2i1.4841.
- [43] MegalonidouC. "The Quality Of Early Childhood Education And Care Services In Greece," *Int. J. Child Care Educ. Policy*, Vol. 14, No. 1, 2020, Doi: 10.1186/S40723-020-00074-2.
- [44] Aboubakr RM, And BayoumyHMM. "Evaluating Educational Service Quality Among Dentistry And Nursing Students With The SERVQUAL Model: A Cross-Sectional Study," *J. Taibah Univ. Med. Sci.*, Vol. 17, No. 4, Pp. 648–657, 2022, Doi: 10.1016/J.Jtumed.2022.01.009.