

Information Technology and Communication of Kindergarten Teachers

Ari Sofia¹,

Faculty of Teacher Training and Education, Universitas Lampung, Indonesia.

Email: arisofia76@gmail.com

Renti Oktaria²

Faculty of Teacher Training and Education, Universitas Lampung, Indonesia.

Email: renti.oktaria@fkip.unila.ac.id

Ulwan Syafrudin³,

Faculty of Teacher Training and Education, Universitas Lampung, Indonesia.

Email: ulwan.syafrudin@fkip.unila.ac.id

Abstract

(ICT) skills of Kindergarten teachers for professional analysis and to analyze the factors that influence the level of ICT skills of Kindergarten teachers. This study used a cross-sectional research design, with quantitative survey data. The research was located in the city of Bandar Lampung. The location selection is based on cross-sectional sampling. Meanwhile, the selection sampling method was using a simple random sampling. The number of samples was 100 teachers, which collected online questionnaires using Google Forms. Data analysis process was done descriptively and inferentially. The results showed that the average level of ICT skills for Kindergarten teachers in Bandarlampung was 58.05 and was in the medium category. As many as 11% of teachers were in a low category and 38% of teachers were in the high category in terms of ICT skills.

Keywords: Information and Communication Technology (ICT), Kindergarten.

Introduction

Education success always needs supports from all components of education. The teachers, as a component of education, are parts of the system which determine hugely the success of education. It means, the success of education lies in the teaching quality that depends on the quality of teachers (Dedi, 1999). The essence of educational activities is teaching and learning interaction, which is an effort to achieve educational goals. Teachers and students are the two elements involved in that process. The role of the teacher is needed to create a conducive interaction. Therefore, the quality of the teacher should be improved.

To ensure the quality of teachers, the government have issued Governmental Regulation No. 19 of 2005 Article 28, Paragraph 3, and Law no. 14 of 2005 Article 10, Paragraph 1. These regulations state that the competence of educators as agents of learning at the pre-school, primary, and secondary education levels includes: pedagogical competence, personality competence, professional competence, social competence (Sagala, 2009). By having those four competencies, teachers are expected to understand the characteristics of teaching and learning interactions and also apply them to the practice process.

In Ministerial Regulation No. 16 of 2007 on Teacher Competence section, it is stated that one of the required professional competences of a teacher is the ability to use information and communication technology to communicate with people and develop themselves. The use of information and communication technology is not included in the scope of pedagogical competence. Meanwhile, it is included in the teacher professional competence scope. In other words, the government wants to implicitly provide information that skills in utilizing information and communication technology, in this context, are for the self-development of teachers themselves to communicate, and find information that supports the learning process when dealing with students.

Teachers always have to be creative, innovative, and imaginative in planning, implementing, and evaluating learning for pre-school in every learning activity, both inside and outside the classroom. Meanwhile, in the practice of planning lessons, teachers are also required by education managers to arrange lesson planning activities and teaching materials using computer facilities, for example. In addition, the need for each school or individual teacher to have ICT infrastructure is also a major factor to contribute this success. This is in line with the results of previous research which states that what can affect a person's level of ICT ability is the availability of ICT facilities and infrastructure itself (Saleh, 2015).

Teachers are also required to be creative in making teaching materials and providing a fun environment by utilizing information and communication technology. For example, teachers can use teaching materials reference using the internet via the *Google* site, or teachers must also be able to use the LCD to display images, films, or videos about specific topic. The computer usage in the learning process certainly create a fun atmosphere for children. As stated in previous research, images and sounds make children do not bored quickly. Therefore, it can stimulate children to know more about the material, be more diligent, and triggered concentrate in the learning process (Dewantik, Mukminin, & Waluyo, 2016).

Another reality is the Covid-19 pandemic affects Indonesia and throughout the world. Recently, the Ministry of Education and Culture, Abdoellah, as the Acting Director (Plt) Director of Pre-school Education and Education Personnel, has reminded through a video conference, stated that Pre-school Education (PAUD) teachers could not to give homework (PR) to students who learn from home during emergency handling of the coronavirus pandemic (Wicaksono, 2020). It is difficult, or even impossible, to implement online learning because pre-school needs a fun learning process.

In practice, the demand for teachers to be creative and innovative in creating a fun environment by utilizing information and communication technology is not always in line with the teacher's actual competence. For this reason, there are needs to conduct this study using a survey research design as a first step in knowing the ICT skill level of Kindergarten teachers in the Teacher Professional Education Program (PPG) in Lampung Province for the process of teaching and learning activities. The ICT usage is expected from learning material planning, learning process, and learning outcomes reporting for each student.

Methods

This research was a quantitative study using a cross-sectional survey research design. According to Creswell (2015), survey research is a procedure in quantitative research where researchers administer a survey to a sample or a whole population of people to describe attitudes, opinions, behavior, or special characteristics of the population. This study involved 100 PAUD teachers in Bandar Lampung. The respondents filled out a questionnaire through Google Forms to determine the skill level of PAUD teachers in Bandar Lampung on the use of Information and Communication Technology (ICT) facilities in teaching and learning activities.

This research took place in Bandar Lampung with all existing PAUD teachers as the population. The study population was selected using a purposive sampling method with the consideration that all selected teachers were a reflection of professional and certified teachers, based on the data of teachers who had passed PPG. The sampling method used simple random sampling by looking at the data of teachers who represented each district in the city of Bandar Lampung with variants of tenure. The number of respondents was 100 teachers.

Result and Discussion

Results

Based on the analysis result, the largest percentage of the 100 respondents studied was in the 20 - 30 years age category which was 38 people (38%). The rest of the distribution of the respondents stated that 30 people (30%) were in the range of 31 - 40 years, 25 people (25%) were in the range of 41-50 years, and 7 people are over 50 years (7%). Details are shown in Table 1.

Table 1. Distribution of respondents by age

No.	Age (years)	Teacher	
		n	%
1	20 – 30	38	38
2	31 – 40	30	30
3	41 – 50	25	25
4	> 50	7	7
	Total	100	100

Furthermore, the results of the analysis based on the latest education shows that there were four categories of teachers with the latest educational background, which were senior high school/equivalent, diploma, bachelor’s degree, and above. The largest percentage was teachers with a bachelor’s degree in education, 91 people (91%). The second-largest populations were senior high school/equivalent category and postgraduate category. Both of those categories have 4 people (4%). The smallest population was one teacher with a Diploma as the latest education, 1 person (1%). Details can be seen in table 2.

Table 2. Distribution of respondents based on the latest education

No.	Latest education	Teacher
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		n	%
1	Senior High School	4	4
2	Diploma	1	1
3	Bachelor's degree	91	91
4	Postgraduate	4	4
	Total	100	100

Furthermore, based on the results of the analysis of respondents with the largest working tenure, the category of teachers who worked more than 10 years was 46 people (46%), less than 1 year were 5 people (5%), 1 to 5 years were 30 people (30%), and 5 to 10 years were 19 people (19%). The details can be seen in table 3.

Table 3. Distribution of respondents based on tenure

No.	Tenure	Teacher	
		n	%
1	< 1 year	5	5
2	1 – 5 year(s)	30	30
3	5 – 10 years	19	19
4	> 10 years	46	46
	Total	100	100

The results of the questionnaire analysis were given to 100 teachers in Bandarlampung with 20 question items and 4 answer options gave 71 as the highest score and 38 as the lowest score. Meanwhile, our expectation for the highest score was 80 and the lowest score is 20. Under the existing research results, a categorization of the ICT skill level of PAUD teachers was made using the following interval formula:

$$i = \frac{NT - NR}{K}$$

$$i = \frac{80 - 20}{4}$$

$$i = \frac{60}{4} = 15$$

Based on the above calculations, the results are presented in Table 4 as follows.

Table 4. Results of the Recapitulation of ICT Skill Level for PAUD Teachers in Bandar Lampung

No.	ICT Skill Level	Teacher	
		n	%
1	Low (38 – 49)	11	11%
2	Medium (50 – 61)	51	51%
3	High (62 – 73)	38	38%
	Total	100	100
	Mean	58,05	
	Deviation standard	7,51	
	Min – Max	38 – 71	
	Modus – Median	61 – 59,5	

Based on the recapitulation results of the teacher's ICT skill level which is presented in Table 4, it shows that the average respondent ICT skills score was 58.05. Average respondents were classified in the moderate category with 51% of the total population. The distribution of respondents who had ICT skills in the low category was 11 people (11%). The rest of the respondents 38 people (38%) had ICT skills in the high category. The picture in the form of a bar chart can be seen in Figure 1.

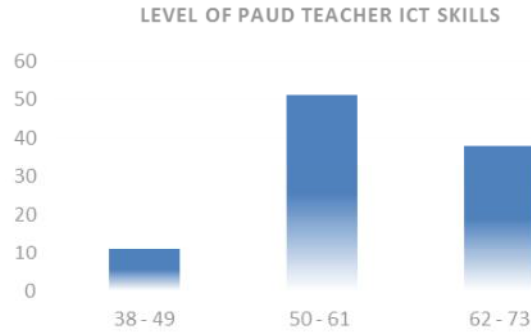


Figure 1. ICT Skill Level for PAUD Teachers in Bandar Lampung

Furthermore, to find out the distribution of respondents' ICT skills by age, the latest education and years of service as other considerations for further research details are shown in Table 4.1, Table 4.2, and Table 4.3.

Table 4.1. Distribution of respondents' ICT Skills by age

No.	ICT Skill Level	Age (years)				Total
		20 - 30	31 - 40	41 - 50	> 50	
1	Low (38-49)	3	1	6	1	11
2	Medium (50- 61)	19	15	13	4	51
3	High (62-73)	16	14	6	2	38
	Total	38	30	25	7	100

It was found that 51% of all respondents were categorized to the medium category. Teachers with medium ICT level (19%) dominated by respondents in the 20-30 year age range. Besides, the high category was dominated by respondents in the 20-30 year age group as much as 16%. However, in the low category, the respondent's ICT skills were dominated by the 41-50 year age group as much as 6% even, though there was still 3% in the 20-30 year age group also in the low category.

Furthermore, the results of the analysis were examined from the distribution of ICT skill levels for 100 respondents based on the latest education which is presented in Table 4.2 in percentage form.

Table 4.2. Distribution of respondents' ICT Skill Level based on their latest education

No.	ICT Skill Level	Latest Education				Total
		Senior High School	Diploma	Bachelor's degree	Postgraduate	
1	Low (38-49)	1	0	10	0	11
2	Medium (50-61)	3	0	46	2	51
3	High (62 - 73)	0	1	35	2	38
	Total	4	1	91	4	100

The ICT skill level distribution of respondents based on the latest education presented in table 4.2 found that the low, medium, and high categories were dominated by groups of teachers with the latest education of bachelor's degree with the distributions of 10%, 46%, and 35% with a total percentage 91%. However, there are 3% of respondents with senior high school education (or equivalent) were found in the medium category and it was found that 1% of respondents with the latest Diploma education in the high category too.

The ICT skill level of the 100 respondents was also classified based on the tenure presented in table 4.3 in the form of a presentation.

Table 4.3. Distribution of ICT Skills of the respondents based on tenure

No.	ICT Skill Level	Tenure				Total
		< 1 year	1 - 5 year(s)	5 - 10 years	>10 years	
1	Low (38 - 49)	0	2	3	6	11
2	Medium (50 - 61)	4	14	9	24	51
3	High (62 - 73)	1	14	7	16	38
	Total	5	30	19	46	100

The ICT skill level based on tenure is presented in table 4.3. The medium category was dominated by teachers (respondents) who had worked over 10 years for 24% or almost half of all respondents in this group. Meanwhile, the low category was also dominated by respondents with a service period of more than 10 years as much as 6%. The high category (16%) was dominated by respondents with a service period of more than 10 years even though 14% of the respondents dominated the medium and high categories with a work period of 1-5 years.

The results of the analysis, findings, and classification are presented in tables and the figure above is a summary of the results of the research based on a questionnaire distributed to 100 respondents. These materials are an illustration of the ICT skill level of PAUD teachers in Bandarlampung City for further study in the same scope or maybe more specific.

Discussion

The results of the analysis stated that the average age of PAUD teachers in Bandarlampung in this study was in the age range of 20-30 years. This age range is considered to be very productive and more proficient in applying ICT. The opinion of Niken et al in their research stated that the age of 20-40 years (early adulthood) is the age at which the ability to practice all the intellectual potential, talents, interests, knowledge, and skills that have been acquired. In other words, at this age stage, each individual is classified at a very productive phase (Palupi, 2017).

The result has shown that the average level of Kindergarten teacher education in Bandarlampung had a bachelor's degree. This is a good achievement that PAUD teachers in Bandarlampung have educational qualifications, according to the national Kindergarten standards, and some are even above bachelor's degrees. Haris Iskandar said that, currently, the number of Kindergarten teachers registered at the Ministry of Education and Culture had reached 552,894 people. Meanwhile, only around 47.79 percent of them had a bachelor's degree qualification. The rest of the teachers were high school graduates (Dirjen PAUD and Dikmas Kemendikbud, 2017). Following Law Number 137 of 2014 concerning PAUD Standards, it is stated that teachers must have a bachelor's degree in education and psychology. The companion teacher might be a senior high school graduate with a PAUD training certificate, while waiting for all PAUD teachers to have bachelor's degree qualifications that quite difficult to attain. Apart from cost constraints, many Kindergarten teachers lived in remote villages. Meanwhile, universities or schools were located in the urban area. Most of the Teachers and Education Personnel (GTK) for Pre-school Education (PAUD) and Community Education (Dikmas) had not had standard academic qualifications. However, these teachers already had certificates of special skills and skills obtained through courses and training (Kurniasih Budi, 2017).

Therefore, the average working period of pre-school teachers in Bandarlampung had reached more than 10 years. Those experiences of being a teacher should make teachers more adaptable in performing out their duties. The findings in this study are in line with Andriana's opinion which stated that teacher qualifications, teaching experience, and teacher training are aspects that affect the competence of a teacher in the field of education and management. It means, the teachers at PAUD institutions had a good performance in planning study materials, teaching execution, examining teaching processes, training students, and doing additional tasks (Andriana et al., 2018). Although there was a different opinion in teaching experience, Nainggolan said that teachers with one year tenure and teachers with 8 years tenure might have similar competence (Nainggolan, 2010). However, teachers with more teaching experience with professional values are expected to have more professionalism in the teaching execution. Meanwhile, the length of teaching experience is related to time and it does not mean that teachers who have been teaching for a long time will have better teaching professionalism.

The results showed that the average level of ICT skills for Kindergarten teachers in Bandarlampung was 58.05 and was in the medium category, even though 11% of the 100 respondents who were still in the low category in ICT skills. Another condition that shows achievement is that there were quite a lot of respondents who meet the ICT skill level score in the high category, which was 38%. This finding needs improvement in the average score of ICT skills for PAUD teachers in Bandarlampung which was still at 58.05. This score was too low compared to the competency standard of passing the teacher certification exam for example. The 11% of teachers who were still in the low category needed improvement, even though there was no guarantee when improving the ICT skills of PAUD teachers as a whole, the existing average score will also increase and some of the teachers may be left in the low category.

Furthermore, in this study, the classification of the low, medium, and high categories was presented based on age, latest education, and tenure to see which groups had moderate scores as the average value of ICT skills from 100 respondents. Based on the distribution of respondents' ICT skill levels based on age, it was found that the age in the range of 41-50 years contributed the most to the low score. This means, the age range showed a decreasing tendency in the mastery of ICT skills. On the contrary, the age range of 20-30 years old contributed the most moderate scores to the average ICT skills. Meanwhile, the high category was dominated by the age of 20-30 years as the largest contributor to high scores. This condition showed that in the context of this study, it was found that the 20-30 years old had more ICT proficiency and skills.

Another classification is based on the latest education. It was found that 91% of the respondents had an undergraduate degree, who should qualify for four competency standards where professional competence, was

required to be mastered and qualified in the scope of ICT skills. In fact, from this classification, 10% of teachers with an undergraduate degree were still the biggest contributor to low scores. The average value of ICT skills was in the medium category which was dominated by 46% of respondents from the last Bachelor education. The high category was also dominated by teachers with an undergraduate degree of 35%. This phenomenon should be studied more because although the average score indicates that the ICT skills of the teachers were in the medium category, there were still some of them that showed ICT skills below standard. It was found that 3% of teachers with high school education were in the medium score category with a fairly high score. This phenomenon broke the assumption that low educational background does not guarantee low grades obtained. There should be other factors that had not been studied in this study.

The last classification is the distribution of respondents' ICT skill levels based on tenure. The results of the analysis showed a tenure of more than 10 years did not guarantee that teachers had better ICT skills than those whose working period ranges from 1-5 years. This is seen in Table 4.3 where the description of the average value of ICT skills in the low category was still found 6% of respondents, whose work period was over 10 years. In the medium category, 24% of the population was dominated by respondents with a service period of more than 10 years, the respondents with a service period of 1-5 years were also quite a lot which was 14%, and also showed good scores. However, the highest score was contributed by respondents whose work tenure was in the 1-5 year range, and there was 1% with a work period of less than 1 year which also showed good scores. This finding needs further research in the future.

Finally, this study only measured the level of ICT skills and did not measure the things that affected the value of ICT skills of Kindergarten teachers in Bandar Lampung. The distribution based on age, the latest education, and years of service are shown in the result of this study. However, several aspect that had not been studied were the correlation between the factors of age, latest education, and tenure to the level of ICT skills, or whether other factors could affect the value of ICT skills of Kindergarten teachers in Bandarlampung, for example, motivation and experience of getting training. The result of this study can be used as a basis to provide a community service in improving the ICT skills of Kindergarten teachers in Bandarlampung. Moreover, it can also be a basis for further researchers to further research about the factors that affect the value of ICT skills of Kindergarten teachers.

Conclusion

Based on the results of the analysis of 100 respondents in this study who were PAUD teachers in Bandarlampung, it was found that the average age of teachers was in the age range of 20-30 years. The average educational level of PAUD teachers in Bandarlampung was a bachelor's degree. The average tenure of pre-school teachers in Bandarlampung was more than 10 years. The average level of ICT skills for PAUD teachers in Bandarlampung was 58.05 and it was in the medium category. There are 11% of the 100 respondents in the low category of ICT skills. A condition that shows achievement is 38% of respondents with ICT skill level score in the high category.

Furthermore, in this study, the classification of the low, medium, and high categories was presented based on age, latest education, and tenure to see which groups get moderate scores as the average value of ICT skills from 100 respondents. In the context of this study, it was found that the 20-30 years old who had better ICT proficiency and skills compared to another age range. Based on the latest education, 91% of the respondents had an undergraduate education. The last classification was the distribution of respondents' ICT skill levels based on tenure. In the medium category, although 24% were dominated by respondents with tenure of more than 10 years, the respondents with tenure of 1-5 years were also quite a lot for 14% and also showed good scores.

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