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**| RESEARCH ARTICLE**

## **Utilization of ICT on Improving the Quality of LPK Learning in Bogor, West Java**

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**| ABSTRACT**

So far, electronic media has become a daily necessity in people's lives. Without the presence of electronic media, everything becomes slow. Developmental psychology and educational sociology are useful in thinking about the relationship between humans and the media. Both paradigms make important valid contributions to communication and media studies seeing the dangers of mainstream media advocating for a proactive approach to ushering in a responsible world. The main study conducted on STI (Skill Training Institute) Mandiri Snur, located in Bogor, West Java, regarding what and how to utilize the use of ICT to form an independent, qualified workforce from the aspect of training and skills carried out by STI so that they are able to compete in the industrial world in Indonesia with their expertise according to government programs, namely Indonesia's superior human resources are advanced and analyze how the use of ICT is used to improve the quality of learning in STI. Based on the description above, specifically, the problems studied and analyzed in this research are formulated as how the use of ICT affects the process and learning outcomes at STI Mandiri Snur, how efficiency, effectiveness, student characteristics, channel availability, and STI environment affect the utilization ICT, how the factors of efficiency, effectiveness, student characteristics, and availability channels affect learning processes and outcomes, how do efficiency, effectiveness, student characteristics, channels and utilization of ICT affect the quality of learning at and how the model of using ICT on the quality of learning at STI.

**| KEYWORDS**

Digital learning, learning design, learning model, media availability, quality of human resources

**| ARTICLE INFORMATION**

**ACCEPTED:** 28 August 2022

**PUBLISHED:** 01 September 2022

**DOI:** 10.32996/jmcie.2022.3.3.1

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**1. Introduction**

Electronic media has so far become a daily necessity in people's lives. By developing their communication statements, young people advance specific development processes. Developmental psychology and educational sociology help us think about human and media relationships. Development communication includes the role and function of communication between all parties involved in development efforts, between the community and the government, starting from the planning, organization, implementation, and controlling of development. (Nasution 2002). Currently, the coronavirus 19 (Covid-19) pandemic has had a significant impact on various sectors, including learning. To prevent the spread of COVID-19, the learning process is carried out using a distance learning system (PJJ). The preliminary study conducted on the Mandiri Snur skills training institute (LPK) located in Bogor, West Java, regarding what and how to use the use of information and communication technology (ICT) to form an independent, qualified workforce from the aspect of training and skills carried out by LPK so that they can compete in the industrial world in Indonesia with their expertise according to government programs, namely excellent Indonesian advanced human resources (HR) and analyze how the use of ICT is used to improve the quality of learning in LPK. A course and training institution is a form of non-formal education unit organized for people who need knowledge, skills, life skills, and attitudes to develop themselves, develop their professions, work, independent businessPK, and or continue their education to a higher level (Law No. 2003 concerning National Education System).

Based on this description, specifically, the problems studied and analyzed in this research are formulated as the use of ICT affects the quality of learning at LPK Mandiri Snur Bogor and analyzes the influence of student characteristics on the quality of learning at LPK Mandiri Snur Bogor. Utilization of ICT to improve the quality of learning at LPK Mandiri Snur Bogor, the effectiveness of ICT on human resources, availability of channels to processes, and results to improve the quality of LPK learning. Previous research on communication stated that *Is ICT the key to development?* (Gholami *et al.* 2010), research findings show that changes in the provision of educational services in ICT have a more substantial impact on human development index scores for less developed countries than for developed countries. At lower levels of development, education drives development directly and indirectly by increasing its effect on ICT. At higher levels of development, education has only an indirect effect on development through ICT. *Information communication technology (ICT) for rural women's life in Bangladeshi villages* (Ashraf *et al.* 2009), the findings show that ICT projects significantly increase the socio-economic opportunities of many women and can be helpful to for academics and governments who want to increase understanding of ICT in rural areas, especially in developing countries.

The purpose of this study was to analyze the use of ICT to influence the quality of learning at LPK Mandiri Snur Bogor and to analyze the effect of student characteristics on the quality of learning at LPK Mandiri Snur Bogor.

## **2. Methodology**

The research design used a *mixed method approach combining qualitative* and quantitative research approaches. The qualitative research approach begins with implementation, planning, collecting data, and hypotheses, analyzing, interpreting data, and reporting the research results (Moleong 2008). A quantitative research approach with a *cross-sectional* to see the completeness of training standards centered on the characteristics of students using ICT in LPK, including Education, age, social status, and media exposure. A qualitative approach to see the implementation of training using ICT which includes the characteristics of LPK, human resource development, and organizational aspects.

The data collection method is carried out with the data used in this study, namely primary and secondary data, both quantitative and qualitative. The methods used in collecting relevant data to strengthen the research analysis are interviews, observation, documentation, and questionnaires. This research uses a sequential *mixed method*.

This research combines two forms of research that have existed before, namely quantitative research and qualitative research (Creswell 2016), in this study also uses a phenomenological approach, assuming that people actively interpret their experiences by trying to understand the world with their personal experiences. The type of research is descriptive correlational. This study intends to describe and find the relationship between several existing research approaches without carrying out the treatment as found in experimental research. The research is categorized as descriptive research, which tries to describe the existing approaches and is also intended to predict the close relationship of one approach to another or between predictors and one criterion approach.

The research was conducted in Bogor, West Java. The time of research implementation took place from pre-research in December 2021. This research started in May 2022 at LPK Mandiri Snur Bogor, West Java, because it has used ICT in its learning with *blended learning*. The population in this study was 100 students of LPK Mandiri Snur Bogor who used ICT in the learning process. Analysis of the determination of the number of research samples used and the Lemeshow formula (Lemeshow *et al.* 1997), namely:

$$n = \frac{z_{1-\alpha/2} P(1 - P)}{d^2}$$

Description:

$n$  = Number of Samples

$z$  = Z score at 95% confidence = 1.96

$p$  = maximum Estimated = 0.5

$d$  = alpha (0.10) or sampling error

Through the above formula, the number of samples taken is:

$n = \frac{z_{1-\alpha/2} P(1-P)}{d^2}$	$n = \frac{1,96^2 \cdot 0,5(1-0,5)}{0,1^2}$
$n = \frac{3,8416 \cdot 0,25}{0,001}$	$n = 96,4 = 97$

Based on this formula, the n or sample obtained is 96.4 = 97 respondents. Data analysis used descriptive statistical analysis in frequency, percentage, average, score, and total score. The statistical analysis is in the form of simple linear regression beta ( $\beta$ ). To analyze the data according to the Lemeshow formula above, 97 LPK students were studied as respondents. Of the 97 students, all filled out the questionnaire distributed by the researcher. Based on the characteristics obtained, there are 40 respondents from participants majoring in cosmetology, 38 respondents from participants majoring in fashion, and 19 respondents from students majoring in culinary arts.

### 3. Results and Discussion

#### 3.1 The use of ICT in LPK Mandiri Snur Bogor on the quality of learning.

The use of ICT on the quality of learning is a social interaction that involves message-based actions and reactions. ICT acts as a collaborative learning media. (Darimi 2017). The function of ICT in learning has three main functions that are used in learning activities: technology serves as a tool. In this case, ICT is used as a tool for users to assist in learning, for example, in processing words and numbers, making programs, and so on. (Ansori 2017). Furthermore, the analysis of respondents' descriptions based on the category of ICT utilization indicators at LPK Mandiri Snur in 2022 in percentage (%) is set out in table 1 below:

**Table 1 Analysis of respondents' descriptions based on the category of ICT utilization indicators at LPK Mandiri Snur Bogor, 2022, with percentage (%)**

utilization indicators ICT	Category	Make-up (n=40)		T.Clothing (n=38)		Catering (n=19)		Total (n=97)	
		Total (person)	(%)	Total (person)	(%)	Total (person)	(%)	Number (person)	(%)
Efficiency Time	efficiency Low	18	45	14	36,8	6	31,6	38	39,2
	efficiency Medium	21	52,5	16	42,1	11	57,9	48	49,5
	efficiency High	1	2,5	8	21,1	2	10,5	11	11,3
<b>Average score</b>								<b>Rataan skor</b>	
efficiency Cost	efficiency Low	9	22,5	5	13,2	2	10,5	16	16,5
	efficiency Medium	17	42,5	16	42,1	8	42,1	41	42,3
	efficiency High								

	High	14	35	17	44,7	9	47,4	40	41,2
<b>Average score</b>								<b>Rataan skor</b>	
Effectiveness of student resources	efficiency Low	13	32,5	14	36,8	7	36,8	34	35
	efficient Medium	16	40	19	50	10	52,6	45	46,4
	efficient High	11	27,5	5	13,2	2	10,5	18	18,6
<b>Average score</b>								<b>Rataan skor</b>	
Effectiveness of trainer resources	efficiency Low	15	37,5	0	-	1	5,3	16	16,5
	efficient Medium	10	25	15	39,5	8	42,1	33	34
	efficient High	15	37,5	23	60,5	10	52,6	48	49,5
<b>Average score</b>								<b>3.31</b>	

Description: Low: < 1.67; medium: 1.67-3.33; high: > 3.33

The results of the percentage of respondents based on the category of ICT utilization indicators at LPK Mandiri Snur Bogor in 2022 above show that the time efficiency indicators of the three majors are moderately efficient, so the use of ICT is quite efficient because there is more time in deepening learning materials. The cost efficiency indicator shows the moderate efficient category, which means that most participants consider it very influential. After all, it can save travel costs and even health costs because it can minimize the possibility of contracting the covid-19 outbreak during the pandemic. The indicator of the effectiveness of student resources, especially in the moderate effectiveness, shows that this indicator also affects because most students are already ready with the training materials. The indicator of the effectiveness of trainer resources in the medium effectiveness category shows the trainers displaying the effectiveness *online* in a health crisis situation due to COVID-19 at LPK Mandiri Snur Bogor. Next, the average score of each ICT utilization indicator is calculated using the total score/number of respondent's formula. Based on the reference, the average time efficiency indicator is 2.72, the average cost efficiency indicator is 3.25, the effectiveness resources average score of students, and on the indicator of the effectiveness of trainers' resources, the average score is 3.31.

**Table 2** the description quality of learning at LPK Mandiri Snur Bogor, 2022 with the percentage (%)

Indicators of learning quality	Category	Make-		T.Clothing (n=38)		Catering (n=19)		Total (n=97)	
		Total (person)	(%)	Total (person)	(%)	Total (person)	(%)	Total (person)	(%)
Human resource capacity improvement	Low	5	12.5	4	10.5	1	5.3	10	10.3
	Medium	18	45	14	36.8	11	57.9	43	44.3
	High	17	42.5	20	52.6	7	36.8	44	45.4
<b>Mean score</b>								<b>3.34</b>	
	Low	6	15	3	7.9	0	-	9	9.3

Awareness of teaching ability	Medium	14	35	12	31.6	10	52.6	36	37.1
	High	18	45	23	60.5	9	47.4	50	51.5
<b>Average score</b>									<b>3.38</b>
Awareness of students' abilities	Low	2	5	3	7.9	0	-	5	5.2
	Medium	21	52.5	12	32	9	47.4	42	43.3
	High	17	42.5	23	60.5	10	52.6	50	51.5
<b>Average score</b>									<b>3.35</b>
Use of communication information systems	Low	2	5	4	10.5	3	15.8	9	9.3
	Medium	22	55	22	57.9	8	42.1	52	53.6
	High	16	40	12	31.6	8	42.1	36	37.1
<b>Average score</b>									<b>3.26</b>

Description: Low: < 1.67; medium: 1.67-3.33; high: > 3.33

Several considerations in the implementation of online learning that need to be considered are 1) The required budget; 2) What materials are prioritized to be included in the e-learning model according to the characteristics and needs, or all subject matter needs to be included; 3) The conventional switch to e-learning can be done alone or requires cooperation with other agencies; 4) Is this change well received by the target audience; 5) How to implement these changes so that they can be achieved effectively and efficiently, including evaluation and follow-up (Anwas 2003).

The results of the analysis of the description of the quality of learning at LPK Mandiri Snur Bogor above show that the indicators for the use of ICT, namely time efficiency, cost efficiency, student effectiveness, and trainer effectiveness, have a balanced capacity or almost the same, but efficiency and trainer effectiveness are superior to other indicators. In influencing the quality of learning, namely increasing the ability of human resources, awareness of teacher abilities, awareness of students' abilities, and the use of communication information systems, as shown in the percentage table above. Furthermore, the average score of each learning quality indicator is calculated using the total score/number of respondents formula, based on the reference on the indicator of improving the ability of human resources, the average high score is 3.34, on the indicator of awareness of teaching abilities the average high score is 3.38, on the indicator of awareness of the ability of students the average high score is 3.35 and on the indicator of the use of communication information systems the average score is 3.26.

**Table 3. Inferential statistical analysis of the  $\beta$  coefficient the Snur effect of the use of ICT use on the quality of learning at LPK Mandiri .013 Bogor, 2022**

Utilization of the use of ICT	Learning Quality (coefficient $\beta$ )			
	HR capability improvement	Awareness of teaching abilities	Awareness of students' abilities	The use of information communication systems
Time Efficiency	.013	.021	.025	.139
Cost efficiency	.259**	.009	.216**	.081
Student effectiveness	.070	.061	.193*	.276**
Trainer effectiveness	.342**	.004	.372**	.140

Remarks: \*significant at 0.01

$\beta$  = simple linear regression coefficient

\*\*significant at 0.05

desc \* explains the value of the  $\beta$  coefficient **Sig.** 0.000 <0.1, then H0 is rejected, and H1 is accepted, then the factor of the use of ICT has an effect on the quality of learning at LPK Mandiri Snur Bogor.

desc \*\* describes the value of the  $\beta$  coefficient **with** the value of Sig. 0.000 <0.05, then H0 is rejected, and H1 is accepted, then the factor of the use of ICT has an effect on the quality of learning at LPK Mandiri Snur Bogor.

Development communication can be formulated as communication to implement a country's development plan. As a process of change and renewal of society, development requires the contribution of communication as part of community activities and as a science that continues to develop from time to time. Various social phenomena caused by this process have inspired the discovery

of new concepts in the field of communication. The communication behavior of a community group continues to change following the changes caused by the change process so that the adaptation process continues. The results of the coefficient value of the **Snur** effect of ICT on the quality of learning at LPK Mandiri in 2022 showed an effect using a simple linear regression test. The cost efficiency indicator explains that the use of ICT affects the quality of learning at LPK Mandiri Snur Bogor. On the indicators of the effectiveness of students on the awareness of students' abilities, the use of ICT affects the quality of learning at LPK Mandiri Snur Bogor.

**3.2 The influence of the characteristics of students in the use of ICT on the quality of learning at LPK Mandiri Snur Bogor.**

One of the development communications in improving the quality of human resources in rural areas is learning, an effort made in the covid-19 pandemic that has significantly impacted various sectors, including the non-formal education sector. All training institutions, schools, and colleges in almost all countries are affected by COVID-19, especially in developing countries and LPK. Implementing the blend is carried out from home, online, and partly *offline*. ICT learning planning for LPK participants is designed to achieve learning objectives, namely increasing students' desire, initiative, and skills during this COVID-19 pandemic as a means of communication, especially in human resource development in rural areas. One of the appropriate learning media for developing communication with this goal is *online* and computer-based media-based learning.

The effect of the characteristics of students in the use of ICT on the quality of learning at LPK Mandiri Snur Bogor is in line with previous research, which identified the *Investigation of the Effect of the Integration of Arduino to Electrical Experiments on Students' Attitudes towards Technology and ICT by the Mixed Method* (Rich Left and Quantity 2019); *ICT integration in the classroom: Challenging the potential of a school policy* (Tondeur et al. 2008); *A mixed-method study of EFL teachers' Internet use in language instruction* 2008). Chen (improved preparation of trainers for the Internet.

**Table 4 Analysis of respondents' descriptions based on the category of student characteristics indicators at LPK Mandiri Snur Bogor, 2022, with a percentage (%)**

Characteristics of students	Category	the Make-		T.Clothing (n=38)		Catering (n= 19)		Total (n=97)	
		Total (person)	(%)	Total (person)	(%)	Total (person)	(%)	Total (person)	(%)
education	High school/equivalent	35	87.5	32	84.2	14	73.7	81	83.5
	Diploma	1	2.5	1	2.6	1	5.3	3	3.1
	Undergraduate	4	10	5	13.2	4	21.1	13	13.4
<b>Average score</b>								<b>2.19</b>	
Age	21-34 years	21	52.5	20	52,6	4	21.1	45	46.4
	35-52 years	19	47.5	18	47.4	15	78.9	52	53.6
	53-70 years	0	0	0	-	0	-	0	-
<b>Average score</b>								<b>2.52</b>	
Social status	Housewives	33	82.5	25	65.8	10	52.6	68	70.1
	Traders	0	0	4	10.5	5	26.3	9	9.3
	Employees	7	17.5	9	23.7	4	21.1	20	20.6
<b>Average score</b>								<b>2.32</b>	
Media exposure	Poor	0	0	2	5.3	1	5.3	3	3.1
	Enough can	18	45	17	44.7	7	36.8	42	43.3
	Possible	22	55	19	50.0	11	57.9	52	53.6
<b>Average score</b>								<b>3.38</b>	

Description: Low: < 1.67; medium: 1.67-3.33; high: > 3.33

Development communication can be formulated as communication to implement a country's development plan. As a process of change and renewal of society, development requires the contribution of communication as part of community activities and as a science that continues to develop from time to time. Various social phenomena caused by this process have inspired the discovery of new concepts in the field of communication. The results of the percentage of respondents based on the category of student characteristics indicators at LPK Mandiri Snur Bogor in 2022 above show that from the education indicators from the three majors, the total percentage is 83.5% for the high school/ equivalent category, indicating the need for skills training is in excellent demand category that for skill improvement. The age indicator shows the percentage of 35-52 categories from the three majors. The total percentage is 53.6% and at the age of 21-34 years is 46.4%, which means that most of the participants are of productive age.

Furthermore, on the indicators of students' social status, especially in the category of homemakers from the three majors, the total percentage of 70.1% dominates because the specialization of the majors, especially cosmetology and catering, is closely related to homemakers. Then the indicators of exposure to media are shown in the table, the category can get a percentage of 53.6%, and the excellent category can be 43.3%. This shows most respondents that the effectiveness of online learning is due to habits in media exposure, which helps the training process at LPK Mandiri Snur Bogor.

There is a significant effect of the characteristics of students on the process and learning outcomes. The average score of each indicator of student characteristics is calculated using the total score/number of respondents' formula. Based on the reference to the education indicator, the average score is 2.19. On the average teaching ability awareness indicator, the average score is 2.52. On the indicator of awareness of the ability of students, the average score is 2.32, and on the indicator of the use of communication information systems, the average high score is 3.38.

**Table 5 Inferential statistical analysis coefficient the *Snur* effect of student characteristics on the quality of learning at LPK Mandiri Bogor, 2022**

Characteristics of students	learning quality (coefficient $\beta$ )			
	Increased human resource	capabilities Awareness of teaching abilities	Awareness of students' abilities	Use of information communication systems
Education	.007	.063	.074	.066
Age	.259**	.205**	.049	.157
Social status	.075	.170*	.056	.101
Media exposure	.088	.049	.045	.055

Remarks: \*significant at 0.01

$\beta$  = coefficient simple linear regression

\*\*significant at 0.05

decs \* explains the value of the coefficient **Sig.** 0.000 <0.1, then H0 is rejected, and H1 is accepted, then the characteristics of students in the use of ICT affect the quality of learning at LPK Mandiri Snur Bogor.

decs \*\* describes the value of the coefficient **with** the value of Sig. 0.000 <0.05, then H0 is rejected, and H1 is accepted, then the characteristics of students in the use of ICT affect the quality of learning at LPK Mandiri Snur Bogor.

The communication behavior of a community group continues to change following the changes caused by the change process so that the adaptation process continues. The results of the coefficient value of the **Snur** influence of student characteristics in the use of ICT on the quality of learning at LPK Mandiri in 2022 show the characteristics of students using a simple linear regression test. In the age indicator, the characteristics of students in the use of ICT affect the quality of learning at LPK Mandiri Snur Bogor. On indicators of social status on the awareness of teachers' ability, the characteristics of students in the use of ICT affect the quality of learning at LPK Mandiri Snur Bogor. In this indicator, students, especially of their social status as housewives, are increasingly aware of the importance of adding teaching that must be followed and understood for higher quality skills.

#### 4. Conclusion

Based on the analysis test, it can be seen in this study that the use of ICT has a significant effect on the quality of learning at LPK Mandiri Snur Bogor; All of these approaches become the utilization of the use of ICT for learning and human resource development consisting of; 1) the process of utilizing ICT for learning and human resource development such as ease of access, facilitating interaction between trainers and students. 2) the results of using ICT for learning and human resource development present the similarity of virtual learning conditions with face-to-face learning in the use of ICT get several results in the quality of ICT use, namely increasing the ability of students' human resources, awareness and ability of students' human resources in using ICT for learning and the use of ICT in the development of quality human resources at LPK Mandiri Snur Bogor.

In the second analysis test, the students' characteristics significantly affected the quality of learning at LPK Mandiri Snur Bogor. The results of the analysis show that the influence of learner characteristics on the quality of learning affects the entire training system and explores the integration of ICT from a policy approach to facilitate improved preparation of trainers for the internet.

#### 4.1 Suggestions

The use of ICT has a significant effect on the process and learning outcomes at LPK Mandiri Snur Bogor by emphasizing the importance of the characteristics of students having a significant effect on the process and quality of learning outcomes. The use of ICT has a significant effect on the process and learning outcomes in LPK, and the process and results of the use of ICT have a significant effect on the quality of the use of ICT in learning at LPK Mandiri Snur Bogor. The research results can be input for the

government, academics, trainers, students, and the community, in general, to create a similar community in promoting the use of ICT, which has a significant effect on the quality of learning at LPK Mandiri Snur Bogor.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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