

# Strategy of Innovative Learning Systems in Elementary Schools During The Covid 19 Pandemic

Susi Sugiyarsih\*, Misriah Ariyani, Yanah Yanah

Economics and Business Faculty

Universitas 17 Agustus 1945

Cirebon, Indonesia

\*ssugiyarsih@gmail.com

**Abstract**—Education is a very important factor in advancing a country, but with the Covid 19 Pandemic, schools are required to carry out innovative education so that they can still implement the learning system remotely from home. The purpose of this study was to determine the effectiveness of education conducted at elementary schools in the city of Cirebon during the covid 19 pandemic. The research method used quantitative methods, data collection techniques used questionnaire, the analysis unit in this study is an elementary school domiciled in the city of Cirebon which numbers 159 schools. The sampling technique used is stratified random sampling. Data analysis tool using Smart PLS 3 software. The results showed that the system innovative learning in elementary schools is still able to run effectively using hybrid learning technology, which is a combination of online and offline learning methods namely by using google meet, WhatsApp group, voice notes, video, zoom and face to face in turn.

**Keywords**—learning system, elementary schools, Covid 19 Pandemic

## I. INTRODUCTION

Elementary school education is the foundation for children in learning because in elementary school students begin to be introduced to the basics of various sciences such as learning to read, learning to write, learning to count, and learning iqro. In the covid 19 pandemic, the policy of learning from home is certainly not an easy thing because teachers are required to be able to develop innovative learning so that the material delivered can be understood by students, especially those who are just sitting in the first grade of elementary school. For some teachers and parents of students this is a burden, especially if the student does not want to do the task given by the teacher, this causes pressure and feelings of annoyance for the student's parents. Therefore, some elementary schools strive to develop digital learning in an innovative way combined with face-to-face learning in school or so-called hybrid learning.

There are several studies on face-to-face learning methods and distance learning, including research conducted by Shivangi Dhawan online learning is easily accessible and cheaper because there is no need for transportation and accommodation [1]. Learning is the ability to use computers and internet networks to learn from anywhere and anytime for various purposes [2]. Sometimes online content contains the

theory as a whole and does not give students the opportunity to practice. Song et. al. that although combined learning heralded current instructional technologies, its growth will be indistinguishably guaranteed to fashionable evidence communication technologies that are in the vein of some aspects of human thought processes [3].

As stated, previous by Jonasen et. al., hybrid learning is innovative in the ground of advanced schooling; even though, the method has already been applied in various Open Universities, most prominently in United Kingdom and the United States of America in the arrangement of *e-learning* [4]. Bestowing to Nichols et. al., e-learning is a position that regulates the instruction of a sequence, and thus, it can be pertinent in several instructional slants following the constructivism or active learning, resource-based learning, collaborative learning, problem-based learning, narrative based teaching, and situated learning [5]. These forms of pedagogical approaches, as defined in the previous sections, are contemporary in the prescribed scenery of advanced teaching [6]. Though, the process of showing hybrid learning programs through e-learning largely deepens on the mark learners, the sequence actuality obtainable, and the quantified learning objectives [6]. The characteristics of hybrid learning explained through the component mixture of planetary, time, and distribution mode are constructed by establishments. Although, there are belongings in which learners are given the source of pride to convert their learning elements contingent on the passage and type of tutoring (grade or non-grade) being assimilated [7]. Miliszewska specified that foundations employment just about the similar development of constructing their hybrid education programs; although, certain variables, such as culture, course nature, and learner characteristics might alter the machines of the hybrid tutoring slant [8].

Alnajdi based on the four constructs identified, the key feature of hybrid learning is that it can be adjusted according to the needs of the learner, the course, and the other significant indicators, such as pace, time, and space [9]. Hybrid inescapably contributes to the compensation for the various shortages in the EFL settings such as a lack of high frequency of exposure, a lack of exposure to the target language community or espousing inadequate learning strategies [10]. Therefore, hybrid learning can be a solution to several

problems. However, one must always bear in mind the purpose of using this approach and the learner's needs. Nurmukhametov the approach in the ground of mechanization attentions on achieving global indicators of educational institutions with modern computer technology to encounter the requirements of educational practice [11]. Based on this background, the purpose of this research is to find out what learning methods as innovations carried out by teachers in elementary schools, especially first grade to achieve the expected learning goals? And what is the effectiveness of this learning method?

II. METHODS

The research methods carried out are quantitative research methods. The analysis unit in this study is an elementary school domiciled in the city of Cirebon which numbers 159 schools. The side technique used is *stratified random sampling*, where from the five sub-districts located in the city of Cirebon each taken several elementary schools to be used as samples.

$$n = \frac{N}{Nd^2 + 1} = \frac{159}{159(0.10^2) + 1} = 61 \tag{1}$$

District Kejaksan:  $n = \frac{33}{159} \times 61 = 12.6 = 13$

District Harjamukti:  $n = \frac{42}{159} \times 61 = 16.1 = 16$

District Lemah Wungkuk:  $n = \frac{27}{159} \times 61 = 10$

District Kesambi:  $n = \frac{43}{159} \times 61 = 16.5 = 17$

District Pekalipan:  $n = \frac{14}{159} \times 61 = 5$

The number of samples in this study is 13+16+10+17+5=61

The research model designed in this study can be seen in figure 1.

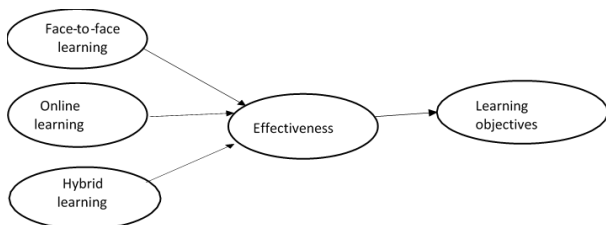


Fig. 1. Research model.

The analytical tool used in this study is the Structure Equation Model (SEM) because to find out which learning methods are most effective to use for elementary school students, especially first graders [12] in this study, the author used Smart PLS 3 software.

III. RESULTS AND DISCUSSION

The Covid-19 pandemic brought many changes because it requires people and students to work or study from home, it is certainly not an easy thing for elementary school students to learn from home using internet network technology. Based on the results of the analysis of the Structure Equation Model path using Smart PLS 3 it can be known that in the variable "study in class" only Q3 questions that qualify above 0.7 are declared valid while Q1 and Q2 are not eligible because the value is below 0.7 so it is removed from the model. In the variable "online study" only Q6 matches the criteria because the value is above 0.7 while Q4 and Q5 are not eligible so they are not used. In hybrid variables only Q12 qualifies. In the variable "effectiveness" variables only Q12 qualifies. In the variable "learning objectives" only Q13 is eligible while Q14 and Q15 do not fit the criteria so it must be excluded from the model. As can be seen in figure 2.

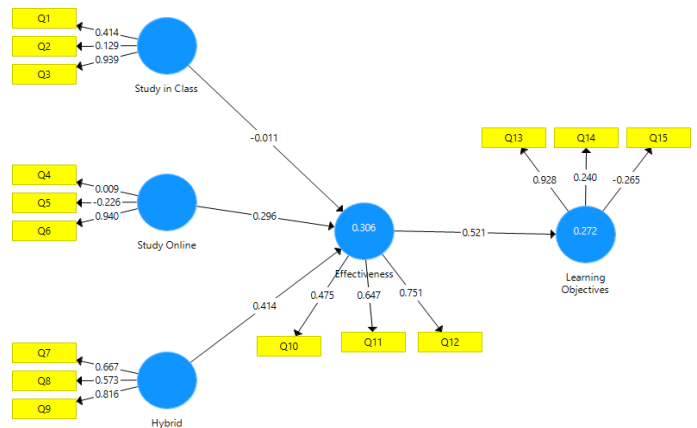


Fig. 2. Track analysis results.

Based on bootstrapping results it can be known that the most effective learning for elementary school students is with the "study in class" method as can be seen in the grades Q1 and Q10 while the "online study" method and the "hybrid" method are less effective. This can be because elementary school students not only need to learn but also need guidance from their teachers so that if learning is done online or hybrid, elementary school students learn more at home with their mother, and usually elementary school students obey their teacher's orders more than their mother's orders (see Fig.3).

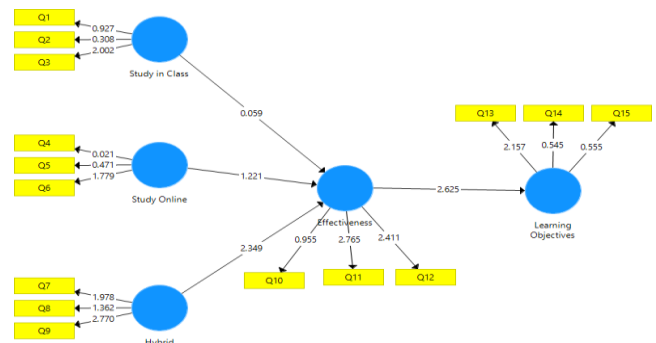


Fig. 3. Bootstrapping results.

TABLE I. R SQUARE

Matrix	R Square	Adjusted R Square
Effectiveness	0.306	0.270
Learning Objectiveness	0.272	0.259

The criteria for R Square values of 0.6, 0.3 and 0.1 as strong, moderate, and weak. Based on the results of the analysis, the value of R Square influence simultaneously variable learning method study in class, online study and hybrid against variable effectiveness is 0.306 or 30.6% with adjusted R square of 0.270 or 27% means there is a strong enough relationship between the research variables (See Table 1).

TABLE II. PATH COEFFICIENT

Online	Path Coefficient				
	Effectiveness	Hybrid	Learning Objectives	Study Online	Study in Class
Effectiveness	0.521				
Hybrid	0.414				
Learning Objectiveness					
Study Online	0.296				
Study in Class	-0.011				

Table 2 based on the results of the analysis "direct effects inner model in the picture above, it can be concluded as follows: (1) The direct effect of study in class on effectiveness is -0.011 or -0.1% meaning that if the study in class variable is increased by one unit it will decrease the effectiveness of learning by 0.1%, this influence is negative. This is because at the time of the covid 19 pandemic people are prohibited to crowd and meet each other because it will potentially contract the covid 19 virus so that the study in class method is very ineffective during the covid 19 pandemic because students can contract the dangerous disease. (2) The direct influence of online study on effectiveness is 0.296 which means that if online study is increased by one unit, then effectiveness can increase by 29.6%. (3) The direct effect of hybrid learning methods on effectiveness is 0.414 or 41.4%. This means that if the hybrid learning method is increased by one unit, the effectiveness will increase by 41.4%. Of the three existing learning methods, only hybrid learning methods have the highest value. Thus, hybrid learning methods are more appropriately applied to elementary school students during the covid 19 pandemic, which is a combination of study in class learning methods and online study learning methods. Teachers draw up learning schedules to use online media such as google meets, videos, photo, voicemail, WhatsApp groups and draw up face-to-face learning schedules in the classroom by dividing the number of students into small groups of eight to ten students to study in class wearing masks, maintaining distance, and complying with health protocols. (4) The direct effect of effectiveness on learning objectives is 0.521 or 52.1%. This means that if the effectiveness of learning increases by one

unit, then learning objectives will increase by 52.1% (See Table 3).

TABLE III. INDIRECT EFFECTS

Total Indirect Influence	Specific Indirect Effects				
	Effectiveness	Hybrid	Learning Objectiveness	Study Online	Study in Class
Effectiveness					
Hybrid	0.216				
Learning Objectiveness					
Study Online	-0.006				
Study in Class	0.154				

Based on the indirect effects table, it can be concluded that: (1) The indirect influence of hybrid methods on learning objectives through effectiveness is 0.216 meaning that if hybrid learning methods increase by one unit during the covid 19 pandemic then learning objectives can increase indirectly through effectiveness by 21.6%. This influence is positive. (2) The indirect influence of study in class learning methods on learning objectives through effectiveness of -0.006 means that if the study in class method increases by one unit in the covid 19 pandemic then learning objectives decrease indirectly through effectiveness by -0.6%. (3) The indirect influence of online study on learning objectives through effectiveness of 0.154 means that if the online study learning method in the covid 19 period increases by one unit then learning objectives will increase indirectly through effectiveness by 15.4%.

TABLE IV. TOTAL INFLUENCE

Matrix	Total Influence				
	Effectiveness	Hybrid	Learning Objectiveness	Study Online	Study in Class
Effectiveness	0.521				
Hybrid	0.414		0.216		
Learning Objectiveness					
Study Online	0.296		0.154		
Study in Class	-0.011		-0.006		

Based on the table 4 of total effects, it can be concluded as follows: (1) The total effect of hybrid learning methods on learning objectives is  $0.414 + 0.216 = 0.63$  meaning that if hybrid learning methods in elementary school students are improved in the covid 19 pandemic by one unit then learning objectives will increase directly and indirectly through effectiveness of 0, 63 or 63%. (2) The total influence of online study learning methods on learning objectives is  $0.296 + 0.154 = 0.45$  meaning that if the online study learning method in elementary school students is increased by one unit in the covid 19 period it will increase learning objectives directly and indirectly through effectiveness by 45%. (3) The total effect of study in class learning methods on learning objectives is -0.011

+ - 0.006 = -0.017 means that if the study in class learning method in elementary school students during the covid 19 pandemic is increased by one unit it will reduce learning objectives directly and indirectly through effectiveness by - 0.17%.

TABLE V. F SQUARE

Matrix	F Square				
	Effectiveness	Hybrid	Learning Objectives	Study Online	Study in Class
Effectiveness	0.373				
Hybrid	0.0227				
Learning Objectives	0.000				
Study Online	0.110				
Study in Class					

In addition to the value of whether there is a significant relationship between variables, it is also considered the large influence between variables with effect size or f-square. The value of f square of 0.02 means small, and 0.15 is medium while the value of 0.35 means large. Values less than 0.02 may be ignored or considered to be no effect. Based on the table, Value of F Square, the large size effect with the criteria F Square > 0.35 is the effect of effectiveness on learning objectives. The moderate effect is with F Square between 0.15 and 0.35 is the influence of hybrid learning methods on learning objectives, and the influence of online study on learning objectives, while the overlooked influence is the study in class learning method on learning objectives because the value of f square < 0.02 (See Table 5).

TABLE VI. DISCRIMINANT VALIDITY

Matrix	Effectiveness	Hybrid	Learning Objectives	Study Online	Study in Class
Effectiveness	0.635				
Hybrid	0.473	0.693			
Learning Objectives	0.521	0.305	0.574		
Study Online	0.379	0.209	0.363	0.558	
Study in Class	0.193	0.251	0.359	0.336	0.597

TABLE VII. FIT MODEL

Model Saturated	Model Estimating	Rms Theta
SRMS	0.314	0.137
d ULS	2.167	2.267
d_G	0.708	0.743
Chi-Square	202.947	0.036
Rms Theta	0.055	0.248

Lohmoller, J. B Fit model limits or criteria include: RMS Theta or Root Mean Square Theta < 0.102, SRMR or Standardized Root Mean Square value < 0.10 or < 0.08 and NFI value 0.9. Based on the results of the analysis of the value

of RMS Theta of 0.248 > 0.102 and the NFI value of 0.055 < 0.9 then based on both assessments of the model, it does not meet the criteria of the fit model, but based on the value of SRMR or Standardized Root Mean Square, the value is 0.013 < 0.10 then the model is fit so it can be concluded that the model is fit with data (See Table 6-7) [13].

TABLE VIII. VALIDITY AND RELIABILITY OF CONSTRUCTS

Matrix	Cronbach's Alpha	Rho_A	Reliabilities Composite	Average Variants Diekstrak
Effectiveness	0.259	0.271	0.662	0.403
Hybrid	0.499	0.491	0.730	0.480
Learning Objectives	-0.061	-0.088	0.288	0.330
Study Online	-0.172	-0.420	0.202	0.312
Study in Class	0.371	0.029	0.532	0.357

Based on the construct validity and reliability table, only the value of hybrid variables that meet the criteria of > 0.7 means that only hybrid variables are valid and reliable so that hybrid learning methods are more appropriate to be used in elementary school students than online study and study in class learning methods during covid 19 (See Table 8).

TABLE IX. PATH COEFFICIENT

	Original Sample	Average Sample	Standard Deviation	T Statistic	P Value
Effectiveness → Learning Objectives	0.521	0.523	0.199	2.625	0.009
Hybrid Effectiveness →	0.414	0.401	0.176	2.349	0.019
Study Online Effectiveness →	0.296	0.224	0.242	1.221	0.223
Study in Class Effectiveness →	-0.011	0.020	0.181	0.059	0.953

Michael, H., and Andreas, M.K Based on bootstrapping results, the value of P Value of the effect of hybrid variables on effectiveness is 0.019 < 0.05 and the value of P Value of effectiveness variables against learning objectives is 0.009 < 0.05 means that the variables are significant. Thus, it can be concluded that hybrid learning methods are more appropriately used for elementary school students in the covid 19 pandemic than the other two learning methods (See Table 9) [14].

IV. CONCLUSION

Based on the results of the above analysis, it can be known that the most effective learning method for elementary school first graders is the method of learning outside the network or directly in the classroom, but in this covid 19 pandemic students are required to study at home so that teachers are required to be able to make innovations in learning. Among the learning innovations that have been carried out by elementary school first grade teachers is a hybrid learning *method*, which is

a combination of online and offline learning methods. For online learning methods, namely using google meet, listening to videos shared in WhatsApp groups, sharing assignments in WhatsApp groups and sending answers from students to teachers through a private network of teachers in the form of photo, video and voice messages, while for offline methods students are scheduled to study in class 1 month consisting of 10 people or divided into several small groups with distance tables and chairs arranged to be far between students and wear masks and comply with health protocols.

#### ACKNOWLEDGMENT

The author thanked the Rector of the University on August 17, 1945, Cirebon, Mr. Prof. Dr. H.M. Guntoro, Ir. Drs. MM. M. Si, the Committee SORES Unisba and a team of reviewers who have given the best advice for this article.

#### REFERENCES

- [1] S. Dhawan, "Online learning: A panacea in the time of COVID-19 crisis," *Journal of educational technology systems*, vol. 49, no. 1, pp.5-22, 2020.
- [2] V. M. Ojocariu, I. Lazar, V. Nedeff, and G. Lazar, "SWOT analysis of e-learning educational services from the perspective of their beneficiaries," *Procedia-Social and Behavioral Sciences*, vol. 116, no. 2014, pp. 1999-2003, 2014.
- [3] L. Song, E. S. Singleton, J. R. Hill, and M. H. Koh, "Improving online learning: Student perceptions of useful and challenging characteristics," *The internet and higher education*, vol. 7, no. 1, pp. 59-70, 2004.
- [4] D. Jonassen, M. J. Spector, M. Driscoll, M. D. Merrill, J. van Merriënboer, and M. P. Driscoll, *Handbook of research on educational communications and technology: a project of the association for educational communications and technology* (Routledge, London, 2008).
- [5] M. Nichols, "A theory for eLearning," *Journal of Educational Technology & Society*, vol. 6, no. 2, pp. 1-10, 2003.
- [6] S. B. Bastable, *Nurse as educator: Principles of teaching and learning for nursing practice* (Jones & Bartlett Learning, Sudbury, 2003).
- [7] B. Morgan-Klein, and M. Osborne, *The concepts and practices of lifelong learning* (Routledge, London, 2007).
- [8] I. Miliszewska, "Transnational education programs: Student reflections on a fully-online versus a hybrid model," In *International Conference On Hybrid Learning And Education*, (Springer, Berlin, Heidelberg, Jerman, 2008).
- [9] S. Alnajdi, "Hybrid learning in higher education," In *Society for Information Technology & Teacher Education International Conference*, (Association for the Advancement of Computing in Education, Waynesville, USA, 2014).
- [10] B. F. Klimova, and J. Kacetl, "Hybrid learning and its current role in the teaching of foreign languages," *Procedia-Social and Behavioral Sciences*, vol. 182, no. 2015, pp. 477-481, 2015.
- [11] N. Nurmukhametov, A. Temirova, and T. Bekzhanova, "The problems of development of distance education in Kazakhstan," *Procedia-Social and Behavioral Sciences*, vol. 182, no. 2015, pp. 15-19, 2015.
- [12] J. Henseler, C. M. Ringle, and R. R. Sinkovics, "The use of partial least squares path modeling in international marketing," In *New challenges to international marketing*, (Emerald Group Publishing Limited, Britania Raya, Inggris, 2019).
- [13] J. B. Lohmöller, "Predictive vs. structural modeling: PIs vs. ml," In *Latent variable path modeling with partial least squares* (Physica, Heidelberg, Germany).
- [14] H. Michael, and M. K. Andreas, "A beginner's guide to partial least square analysis. *Understanding Statistics*," vol. 3, no. 4, pp. 283-297, 2004.