

# Opportunities And Challenges In The Use Of Information And Communication Technology: Study For "Teaching From Home" For Pandemic COVID-19

Jamaluddin Ahmad, Nurlaelah Mahmud, Abdul Jabbar, Muhammad Ikbal

**Abstract:** Home learning since the COVID-19 pandemic has gained popularity in the field of education. However, there is little research that empirically examines the extent to which teachers are innovating using blended learning experience weaknesses and challenges compared to those who interact face to face. A total of 99 teachers who teach from home in Sidenreng Rappang Regency, Indonesia were recruited for this study. The teachers randomly sent questionnaires via Google form for eight weeks, experiencing learning from home. An interview immediately follows a survey that measures the perception of the perceived experience. Teachers belonging to the millennial generation and generation X report more variation in instructional media than the boom generation, but overall experience the same challenges and opportunities and the perceived teaching. The principal's leadership strategy determines to teach success from home by increasing competitive and comparative advantage, investing to increase strength in facing opportunities, divesting to use force to avoid threats and subsidies accompanied by assistance.

**Index Terms:** Teaching from home; opportunities and challenges; strengths and weaknesses.

## 1. INTRODUCTION

The education sector experienced a significant change in the COVID-19 pandemic. The learning process activities use communication information technology (ICT) because of the learning policy at home only. This policy was taking to address the worldwide circulation of the coronavirus. Health knowledge and disease prevention experience in the general population requires reinforcement [1]. Of course, this policy has weaknesses and obstacles because, suddenly, without proper preparation, a crisis preparation plan before the crisis occurs [2]. The government, school principals, teachers, students, parents, the community and all stakeholders in the field of education in Indonesia are also experiencing changes. The weaknesses and challenges of "Teach from Home" in Indonesia, of course, have a difficult choice in its application, how the situation becomes an opportunity to strengthen competitiveness, creativity, skills, innovation, and responsiveness is one strategy. The principal, as the closest leader, positively must have several alternatives to determine the approach [3]. Analysis of strengths, weaknesses, opportunities, and threat (SWOT) is one alternative to determine strategy [1]. This strategy is learned based on the perceptions of the teacher, students, and the school principal itself.

In the "Teach from home" policy, the SWOT analysis approach tends to have little predictive influence on the determination of an efficient and effective strategy. Unlike other systems, the "teach from home" policy is a policy that is born from uncertainties in a competitive environment [4]. The situation, which consists of opportunities and threats, dramatically influences this policy. The principal, as a leader, must take the right strategy [3] so that the learning process, namely the interaction between teachers and students, remains carried out. The study of agile leadership consisting of strategic sensitivity, leadership unity, and resource fluidity [5] using SWOT analysis is one interesting approach. Alternative selection strategy among the various alternatives provided is one of the art and science of decision making [6] leadership. In some educational research, the focus is on the use of instructional media [7], learning methods, and the quality of student understanding [8]. There is not much talk about the principal's leadership strategy in urgent situations, such as in the COVID-19 pandemic situation. Therefore, this research focuses on the selection of policy among various alternatives by environmental conditions that are full of uncertainties. Uncertainty decisions are decisions that are born from environmental uncertainty situations [5]. By making conceptual and methodological recommendations, we contribute to the literature on decision making analysis—Decision-making theory on alternative selection strategies among various alternatives among environmental uncertainties. Plans of competitive advantage and comparative advantage [9], [10], are the expectations of every leader in decision making. Investment strategies to reduce weaknesses between available opportunities are also leadership expectations. Likewise, a divestment strategy to use force to avoid challenges is also a leadership expectation [10]. Finally, the damage control strategy [2].

## 2 LITERATURE REVIEW

Strategic management as a complicated reciprocal relationship [10], as well as economic thought [11], and the ability of competitive advantage [4], [11]. The critical role of

- Jamaluddin Ahmad is currently a lecturer at Universitas Muhammadiyah Sidenreng Rappang. E-mail: [jahmadladdo@umsrappang.ac.id](mailto:jahmadladdo@umsrappang.ac.id), [jahmadladdo@yahoo.co.id](mailto:jahmadladdo@yahoo.co.id)
- Nurlaelah Mahmud is currently a lecturer at Universitas Muhammadiyah Sidenreng Rappang. E-mail: [nurlaelah.pps13@gmail.com](mailto:nurlaelah.pps13@gmail.com)
- Abdul Jabbar is currently a lecturer at Universitas Muhammadiyah Sidenreng Rappang. E-mail: [jbr.nyonk1@umsrappang.ac.id](mailto:jbr.nyonk1@umsrappang.ac.id)
- Muhammad Ikbal is currently a lecturer at Universitas Muhammadiyah Sidenreng Rappang. E-mail: [iqbal.sidrap@yahoo.com](mailto:iqbal.sidrap@yahoo.com)

strategic management in adapting, integrating, and reconstructing internal and external functional skills, resources, and technical competencies that by changing environmental requirements [11], requires an assessment of internal and external environments [12]. Thus, strategic management is a complicated reciprocal relationship, given the advantages and competitive advantages of adjusting to internal capabilities and the external environment. Two things are essential in the concept of strategic management, namely the chief executive officer (CEO) and SWOT [13]. First, the CEO leads and directs to achieve his goals in facing increasingly tricky environmental challenges, and demands the stakeholders [14]. The CEO is more a process architect and facilitator [15], every executive or CEO who thinks strategically will have a direct answer to the question of how, namely the question of several priorities related to competition [7]. The CEO must want an agile transformation [7]. Most CEOs are usually the most effective at developing complementary styles [14]. CEOs are executives who think strategically, facilitators, and transformers who are agile in facing the challenges of the uncertain environment.

		Internal Capability	
		Strengths (S)	Weaknesses (W)
External Environment	Opportunities (O)	Comparative advantage and competitive advantage S-O Strategy	Investment W-O Strategy
	Threats (T)	Divestment S-T Strategy	Damage Control W-T Strategy

**FIGURE 1.** Matrix SWOT, developed from [16]

Second, planning and review are two fundamental processes in decision making. The plan becomes a controlling tool for decisions. In contrast, the report becomes a means of filtering information for the decision hierarchy. Planning is related to decision making, so strategies are needed to choose alternatives among the various options that are available—choosing options using the analysis methods of Strengths (S), Weaknesses (W), Opportunities (O), and Threats (T) (SWOT) [1], [10]. The origin of the term "SWOT" is unknown [10]. Although previously, this term by some scholars such as Wheelan and Hunger (1998) using SWOT to find gaps and matches between competencies and resources and the business environment in policy texts [10]. The point is that SWOT is strategic management to analyze internal capabilities with the organization's external environment, used as a long-term planning tool, identifying gaps between the current situation, vision, and mission [10] organizations. The SWOT analysis provides a foundation for the realization of the desired harmony of organizational variables. Comparative advantage and competitive advantage or S-O Strategy is a strategy between strength and opportunity. This strategy results in a faster increase [17] because it meets the strength of the organization's capabilities with external opportunities. This strategy is more realistic to include innovation [18], is more directed at personal consultation than external [19], and response analysis. The S-O strategy is a more realistic strategic agility using the strength of internal capabilities to

respond to opportunities in the external environment. Investment strategies are passive strategies [20], and legitimize their innovation processes to reduce risk [21], and have a long time and financial factors [20], [21]. This strategy is responded to passively through long-term innovation, requires finance because of external opportunities while there are weaknesses in internal capabilities. Divestment Strategy or S-T Strategy is the interaction between internal forces and challenges or threats to the external environment. This strategy usually uses outside funding sources as a responsible investor [20] by applying power to minimize threats. Finally, the Damage Control or W-T Strategy is the interaction between weaknesses and threats. This strategy is calling a crisis [2] because it has difficulties in making decisions. From the SWOT matrix description, as explained, leadership agility is needed in every strategy. Although more in-depth research is needed to apply in government bureaucracy [22]. Strategic sensitivity, leadership unity, and fluidity resources [5], as well as accurate perceptions and broad insights [15], are dimensions of leadership agility. Strategic sensitivity is the ability to adapt to developments that occur in the environment of uncertainty, leadership unity is the ability to build commitment among all elements of the organization to deal with the environment of uncertainty, and fluidity resources are the ability of human resource management and other resources to deal with the environment of uncertainty.

### 3 METHODS

The research method used is descriptive qualitative, examining individuals and groups as a unit of analysis as individuals selected the school principal and teachers, and as a group selected the Principal Conference Activities every month. The main focus of this research is the "Teach From Home" education policy pursued by schools related to the COVID-19 pandemic. Data collection using in-depth interviews, questionnaires, and literature studies. The collected data is using the "run query Nvivo-12 plus" program to get the variant. The process of the research phase begins with gathering, coding, grouping, categorizing, analyzing, and drawing conclusions. Determination of the sample using purposive sampling and snowball sampling. Research questions are in the form of free answers; How do principals encourage teachers to carry out learning from home? What steps are taken by the principal to ensure that learning from home is carried out and achieve the learning objectives? How do you build a "Teach From Home" commitment? Are there specific strategies regarding the "Teach From Home" policy? What are the reasons, implementing "Teach From Home" in addition to COVID-19 rights? The results of the data were with the theory and the effects of previous studies that are considered relevant researchers to use the comparison. The analysis procedure includes testing the validity of using triangulation of sources, time, and place. Grouping data in the form of matrices and tables that have been processed for analysis with three data analysis techniques through pattern matching, making explanations, and time series.

### 4 RESULTS AND DISCUSSION

#### 4.1 Results

In particular, the analysis highlights that the driving force "Teach from home" is related to the resources of teachers and readiness to accept changes in the ICT system in the learning

process. Figure 1 shows that 60.6% of teachers are in the millennial generation category, there are 30.3% generation X, and the remaining 9.1% are boom generation. The millennial generation is according to Howe and Strauss defines millennial grouping as consisting of individuals born between 1982 - 2004, boom generation born in the range of years less than 1960, and generation X years born in 1961-1980 [23].

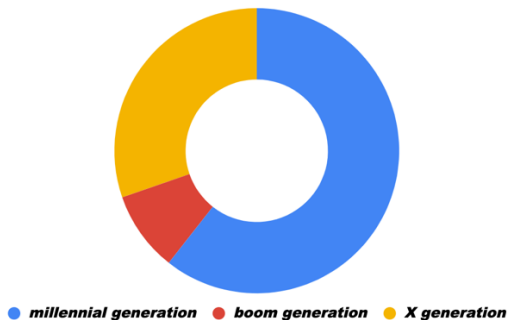


FIGURE 2. Respondent by generation

Likewise, readiness to accept changes in ICT learning by using existing applications. Based on Figure 2 also shows that 39.4% of new teachers first used online learning applications. The remaining 51.6% said they had carried out online learning, only that it was repeated in the COVID-19 pandemic situation, meaning that more were ready to carry out "Teach from home".

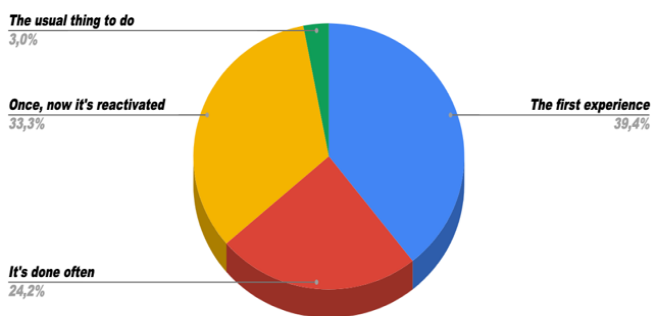


FIGURE 3. Respondent by online teaching experience

As for the use of instructional media that had existed during the COVID-19 pandemic, there were already 12% of teachers who combined using Zoom, WhatsApp, and Google classroom, see figure 4. This is interesting because teachers are no longer monotonous on one application system but are trying variation. Even so, there are still 88% using a single application that is already available. Google class application users reached 36 people, followed by WhatsApp (WA) application users as many as 21 people, then 15 people used the zoom application, while the remaining 3 people each used the Moodle application, zoom combined with Google classroom, Kaizala application, and Quizizz application. There are 9 people who combine zoom, WA, and google classes. The last 6 people used the Cisco Webex application, all of which are still separate according to the creations of the teachers.

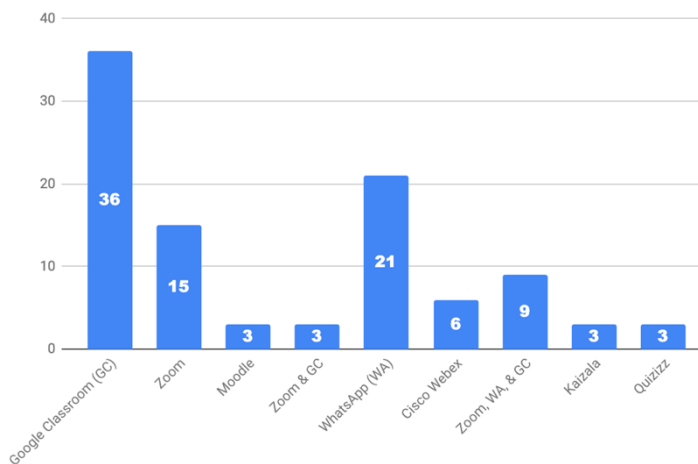


FIGURE 4. Respondents based on application usage online teaching experience

In the next section, we discuss SWOT analysis of the principal's leadership in the "Teach from Home" COVID-19 pandemic situation and analyze relevant strategies that can trigger a transition to sustainable learning based on Information and Communication Technology (ICT). The SWOT-Leadership Perspective analytic framework provides interesting insights into the internal driving forces and utilizes policy opportunities at the "Teach from Home" implementation level and the landscape of the online learning sector in schools. SWOT analysis is one analysis tool that is able to identify strategies. Internal combination of strengths and weaknesses, and external combination of opportunities and threats. The strategies presented are potential actions - both at the local government level and school principals - that can find a way out of the COVID-19 pandemic and further after an emergency. In the following explanation, we explain the strategies that occur in each SWOT quadrant by using existing data and the likelihood of this happening. The SO strategy, see table 1, investment in purchasing adequate facilities to support the implementation of ICT-based learning can be the basis for better use of human resources in schools, and future innovation. Furthermore, promoting the benefits of innovative technology-based learning is very relevant to the current condition of people's culture which tends to utilize technology in all their activities (ie online shopping, online meetings, social media, etc.). Likewise, ICT trainers for school teachers can be interesting initiatives to improve the capabilities of educators and education personnel so that the quality of education is better. Likewise, the reporting strategy of the "teach from home" activity using existing applications is available free of charge. The teachers report their activities to the principal through the "google form" application during the COVID-19 pandemic. So that the management of the school learning process remains controlled by the principal.

Table 1. "TEACH FROM HOME"

	Strengths (S)	Weaknesses (W)
Internal Capability	High teacher compliance with school principals	Don't have an online learning system
	Availability of human resources who are willing to cooperate	Expensive content creation

	High teaching culture	Not ready for teaching materials
	Adoption of the Online Learning program	The network does not support and high quota fees
	Opportunities (O)	Threats (T)
	Information and Communication Technology (ICT) based Learning Innovation Policy	Not all students have online learning tools
	Development of information and communication network infrastructure	Students do not have a quota and Students are difficult to control
External environment	Increasing the number of ICT-based learning policies	Students are not disciplined in following the lesson, parents of students do not understand well
	Increased support from parents of students for the use of ICT	Sometimes the teaching schedule is not timely
	Development of technology-based services	Less long-term planning, and lack of policy coordination
	Increased achievement of output-based learning	The negative effects of technology

## 4.2 Discussion

Based on the perceptions and opinions of the principals interviewed, a strategy that can increase the internal strength of the "Teach from home" policy implementation and take advantage of the opportunities of principals and local government regarding increasing commitment to ICT planning through investments in technology infrastructure platforms; promoting the benefits of innovative technology-based learning; and support ICT training for teachers in schools. Because the SO strategy supports better school human resource management, this strategy has the opportunity to add value to innovative schools if supported by investments in educational technology infrastructure [24]–[26]. This is an important issue, given that the education sector in Indonesia often changes along with leadership changes. The WO strategy in this category is the investment to prepare yourself to take advantage of external opportunities. Investment in providing internet quota subsidies to teachers is an alternative, especially the COVID-19 pandemic situation "Teach from home". Options that seek to take advantage of external opportunities to make up for internal weaknesses in the education sector. ICT-based learning policies become a trigger in increasing knowledge about ICT. This subsidy is implemented in the form of a transfer of operational funds for school assistance and assistance from the school committee. Based on the data in Figure 1 that around 91% of the teachers are in the millennial generation and generation X categories which tend to use more ICT activities in their lives, the mentoring strategy is also an alternative. Junior teachers (millennial and boom generation) accompany senior teachers (boomer generation) in making ICT-based learning media. To overcome external gaps (threats) by strengthening internal schools, some research results show that the most relevant strategy is divestment by using force to reduce threats. The long-term planning policy on teacher development is recognized as a relevant institutional strategy for ICT-based

quality education interventions. However, according to research results teachers generally play a marginal role in the education sector innovation planning process. Therefore, the teacher development policy and involving them through education innovation planning policies may be a successful strategy for developing the education sector, especially in the schools where the teacher teaches. Another critical factor affecting is represented by the low student response, which progressively reduces school competitiveness. Long-term planning strategies can pave the way for increased competitiveness. Specifically, policy strategies must help schools help students who are less able in terms of ICT, lack discipline, and consumptive life behaviors. This, in turn, can encourage improvements in the quality of human resources and job creation. For example, school operational cost management assistance has been through a policy of state budget revenues and expenditure politically in the House of Representatives. Currently, school operational assistance tends to be low in efficiency and effectiveness. The budget is used more for administrative matters compared to improving the quality of the learning process. So the learning process still requires subsidies from students' parents or the community [27], it still needs mutual cooperation among all school stakeholders [28], and is further improved transparently and accountably through e-budgeting [29]. Another example is the teacher certification policy in accordance with the mandate of the Indonesian education system law to improve the performance and quality of the learning process. Several studies have shown that there is no strong evidence about the effectiveness of certified teachers on student learning outcomes and teacher performance [30], teacher certification has not had a significant effect on improving the quality of learning [31], but teacher performance can be improved through principal leadership and a conducive work environment [32]. Therefore, the strategy to strengthen the principal's leadership is one of the strategies to reduce the weaknesses of the "Teach from home" learning process. For comparison, some research results show that teachers' perceptions of school climate in major urban districts in the Western United States are determined by the leadership of the principal [33], principals play a very important role in making Chinese education policy the key to successful school development and improvement [34]. The dimensions of the organizational climate and the principal's leadership style determine the development of the quality of the learning process in primary schools in the Lipis district, Pahang, Malaysia [35] [35]. The point is that strengthening the principal's leadership will reduce the challenges of educational development, especially in determining the quality of the learning process. Weaknesses and threats faced by schools in implementing the "Teach from home" policy are numerous and important, as a result, it is difficult to identify strategies that address them all. However, according to the results of the study of some education experts that the most relevant strategies include; the education sector bureaucratization is reduced; simplification of educational administration procedures; and compulsive life is reduced. In this way, stakeholders in schools such as local government, principals, teachers, school committees, students, and communities can structurally regulate themselves autonomously. An important element in facilitating school stakeholders to reduce the bureaucratization of education is involved in the activities of political parties or the interests of power which are often

carried out including the election of regents, gubernatorial elections, presidential elections, and legislative member elections. Strategies aimed at this goal can be implemented by giving autonomy to principals and school committees to develop ICT in order to be competitive. The application of this strategy can encourage skills, creativity, innovation, and responsiveness which are currently highly fragmented. This can reduce educational administrative procedures that tend to be convoluted. Examples of procedures for disbursement of school assistance funds, reporting of learning activities, absenteeism of teacher attendance, the consequences of teachers' hours of instruction, and others. In connection with the last point is to reduce the life of consumptive, at present, there are only a small number of my uncle that schools are aware of this; as a result, not all students have online learning tools, students do not have quotas, and students are not disciplined because for them the matter of school payments is a government affair. Even though they have money for payment, they are diverted to other purchases for short-term consumptive behavior. Likewise, teachers experience difficulties in teaching materials and internet quotas because they have to do with consumer behavior.

## 5 CONCLUSION

The conclusion can be made that, teachers belonging to the millennial generation and generation X report more variation in instructional media than the boom generation, but overall experience the same challenges and opportunities and the perceived teaching. The principal's leadership strategy determines to teach success from home by increasing competitive and comparative advantage, investing to increase strength in facing opportunities, divesting to use force to avoid threats and subsidies accompanied by assistance.

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