

Effectiveness of Learning Activities in the Pandemic and Post Pandemic Era

Asep S. Chalim, Fadly Usman, and Baiq Mulianah

ABSTRACT

For over two years, home learning during a pandemic has been experienced by almost all schools globally. Learning during a pandemic impacts not only teaching and learning in schools but also the load of learning materials that teachers must convey to students. Online learning becomes the choice as almost all teachers are encouraged to work from home, with students also having to learn from home. No one knows how long it will last and when it will end. Facts show that during a pandemic, not all students have the ability or capability to take online lessons. Additionally, teachers are also burdened with paying for the internet connection to teach, while basic needs such as food and clothing during the pandemic stay unfulfilled due to economic difficulties from the pandemic. In this study, a study was carried out to determine the level of learning effectiveness during a pandemic. Over 200 high school students became respondents in the study, and 50 teachers gave their opinions through questionnaires and interviews. The researchers used three analyses to identify the required strategic steps: performance analysis, GAP analysis, and the Analysis of Standards-Importance-Advice-Performance (ASIAP). The results were quite surprising, showing that most students want to return to school and follow normal learning, mainly due to internet connectivity issues and feeling that the non-interactive online learning materials are more difficult to understand. Another concern is that only a small number of students can concentrate well in the online learning process, while the remaining learning activities are mixed between school activities, home activities, and other unavoidable activities.

Keywords: ASIAP, Effectiveness, Learning Activity, Online Learning, Pandemic Era

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I. INTRODUCTION

The COVID-19 outbreak has directly affected the education system in Indonesia. Since the beginning of the epidemic, schools have searched for innovations to enable the teaching and learning process to continue to run well. In the end, it was decided through Circular no.4 of 2020 from the Minister of Education and Culture that all activities in educational institutions must maintain distance, carry out health protocols, and all delivery of learning materials will be delivered in their respective homes (Ali Sadikin *et al.*, 2020). The learning methods during the pandemic have adjusted to the direction of the central government, which can use several learning methods, including (Dewi *et al.*, 2020); Project-Based Learning, online method, offline method, home visit, integrated curriculum, blended learning, and learning through radio.

Project-Based Learning. This method was suggested by the Minister of Education and Culture Circular No. 4 of 2020. Its main objective is to provide students with training to collaborate, work together, and empathize with others. This method is very effective for students by forming small study groups to work on projects, experiments, and innovations. This learning method is suitable for students who are in the yellow or green zone. Of course, this must also heed the related health protocol.

Online Method. This method utilizes an online network and is expected to enhance student's creativity through the existing facilities, such as creating content using items around the house or conducting learning activities through the online system. This method is suitable for students who are in the red zone. Using the full online method enables the learning system to continue, and all students safely remain at their respective homes.

Offline Method is a learning model that is carried out normally. This learning is carried out face-to-face with due observance of the applicable zoning and health protocols. This method is suitable for students in the yellow or green zone, especially by running the new normal protocol. In this method, students will learn in turns (shift model) to avoid crowds. This learning model was suggested by the Minister of Education and Culture to meet the curriculum's simplification during the pandemic. This method is designed to ease the

delivery of the curriculum. Additionally, this method is also suitable for those who lack or do not have the supporting facilities and infrastructure for the online system.

The Home Visit Method is another learning option during this pandemic. This method is similar to the teaching and learning activities delivered during homeschooling. Here, the teacher conducts a home visit to the student's house at a certain time to convey the material to the students. The subjects and assignments are expected to be carried out well under the guidance of the teacher.

Integrated Curriculum, this method will be more effective when referring to the project base, where each class is given a project relevant to the subject. This method does not only involve one subject but also links learning material from other subjects. This method allows students to collaborate on projects and also allows teachers to hold team teaching with teachers on other subjects. The integrated curriculum can be applied to all students in all regions because it will be applied with an online system; thus, its implementation is considered very safe for students.

Blended Learning is a method that uses two approaches at once. In a sense, this method uses an online as well as a face-to-face system through video conference. So, even though students and teachers do remote learning, they can still interact with each other. This method is effective for improving the cognitive abilities of students.

Learning through radio can be a learning innovation during a pandemic. This method can be implemented in collaboration with the Education Office with the local FM Radio or government-owned radio. This method is one way of overcoming internet accessibility difficulties and a solution for parents with no smartphone. Learning is carried out by competent teachers with students as models and also carried out interactively with students as listeners. For the kindergarten level, it can be carried out on specific day through Learning with Storytelling at the elementary and junior high school levels; schedule arrangements can be made according to each school's needs.

Given that the government does not have a definitive date for the end of the Covid-19 pandemic, the learning method above can be options for students, teachers, and schools to facilitate the teaching and learning activities to continue according to the expected target. In this study, several technical approaches were carried out to determine the level of effectiveness of learning during a pandemic. Learning activities during a pandemic have been conducted for over a year. This research is expected to provide strategic steps for schools and the Education Office to implement, allowing students to learn while also considering the learning materials are in accordance with the education level..

II. LITERATURE REVIEW

A. Importance Performance Analysis

Martilla and James (1977) first introduced the Importance Performance Analysis (IPA) Method to measure the relationship between consumer perceptions and product or service quality improvement priorities. IPA is also known as the quadrant analysis, as one of its results shows each attribute's location in a particular quadrant on the prepared Cartesian axis (Ennew *et al.*, 1993; Silva F *et al.*, 2011). The Importance Performance Analysis is used to map the relationship between each offered attribute's importance and performance and the gap between performance and expectations of these attributes through the Gap analysis (Abalo *et al.*, 2007; Cronin J Joseph, 1992).

IPA's main function is to display information about service factors that consumers believe greatly affect their satisfaction and loyalty, and also service factors that consumers believe need improvement as they are unsatisfactory (Cilliers *et al.*, 2014; Kitcharoen, 2004; Lin *et al.*, 2009). The Gap Analysis is a measurement method to determine the gap between a variable's performance and consumer expectations. The Gap Analysis is part of the IPA (Importance-Performance Analysis) method (Matzler, K, 2003; Silva F, 2010; Shu-Ping Lin *et al.*, 2009).

A positive gap (+) will be obtained if the perception score is greater than the expected score. In contrast, a negative gap (-) will be obtained if the expected score is greater than the perception score. The higher the expectation score and the lower the perception score, the bigger the gap. If the total gap is positive, the customer is considered to be very satisfied with the company's services. Conversely, if the gap is negative, then the customer is unsatisfied with the service (Wong *et al.*, 2011; Wu H *et al.*, 2010). The smaller the gap, the better. Usually, companies with good service levels will have smaller gaps (Yu Chuan Chen, 2013; Linda, S, 2010). There are four quadrants from the results of the Importance Performance Analysis, namely;

Quadrant I (Concentrate here) contains attributes considered important by respondents, but these attributes are not as expected in reality. The performance level of these attributes is lower than the level of customer expectations of the attributes. The performance of the attributes contained in this quadrant must be further improved to satisfy customers.

Quadrant II (Keep up the good work): These attributes have a high expectation and performance level. This shows that these attributes are important and have high performance and must be maintained as it is

considered very important and the results are very satisfying, even exceeding the level of service felt by the respondent.

Quadrant III (Low Priority), the attribute in this quadrant is considered less important by respondents. It means that the attributes in this quadrant have a low level of importance, and their performance is also considered poor by customers. Improvements to the attributes included in this quadrant need to be reconsidered by looking at the attributes that impact the customer's benefits, whether large or small.

Quadrant IV (Possible overkill), the attributes in this quadrant have a low level of expectation according to the respondent but have a good performance, so the respondent considers it excessive. This is because respondents think that these attributes are not very important, but the implementation of performance exceeds the level of importance..

B. Weakness of Importance Performance Analysis

As previously explained, the Importance Performance Analysis unfortunately only considers the importance and performance factors. Thus, only the point of view of the service recipient or product user is considered. For example, in the analysis of an education curriculum for high school students, students are asked several variables related to the curriculum: learning materials, duration of learning during a pandemic, or school assignments. Students will then answer according to their thoughts or opinions, disregarding the importance of the educational objectives and competencies designed by the school.

How can a student be given the authority to assess the performance of the learning system or curriculum content? This should be a subject of discussion by educational experts in each field. If assessing the level of importance and performance is left to students, they may only choose lessons that are fun, such as physical education (PE) or others, and disregarding the educational objective of the student competencies.

To fix the weakness of the Importance Performance Analysis (IPA) method, then the Z factor is included, which is the opinion of the experts in the subject. In this study, the analysis not only regards the level of importance, service level, and expert opinion but also the standards used by educational institutions or other institutions. Each school certainly has a different policy in school management.

For example, a school with a dormitory has specific variables closely related to student services such as dormitories, dorm toilets, dormitory canteens, school security, and supervising teachers in dormitories. This parameter will certainly be different for non-boarding schools, where the variables are directed at the availability of parking spaces for students, school toilets, school bus stops, shared study rooms, etc.

To bridge the need for better analytical methods based on the desired service conditions, this research uses the Analysis of Standard, Importance, Advisory and Performance, where each variable will be assessed based on the level of importance and service, based on applicable standards and according to the opinions of experts in the field.

III. RESEARCH METHODOLOGY

Different from the Importance Performance Analysis, in the Analysis of Standard-Importance- Advice-Performance (ASIAP), the calculation of the study's attributes will then be included in the standard, importance, advice, and performance table. The service level is the main assessment, and the analysis results are in the form of action priority colors, which can be shown in the matrix. One of the advantages of ASIAP is the inclusion of expert opinion and applicable service standards, such as government standards or others (Asep *et al.*, 2016; Fadly *et al.*, 2019). The attributes in the Advisory table are the results of the expert opinion based on their respective field (Herliandry *et al.*, 2020).

Considering that the research is on the effectiveness of learning during the COVID-19 pandemic, the chosen experts are the Principal, Deputy Principal, and Academics in education. The research was conducted at Amanatul Ummah Middle School, Surabaya, which implements a blended learning system, both online and face-to-face learning in classrooms. Respondents consisted of 200 students and 50 teachers, and 15 people comprised of Foundation members, caregivers, school principals, school representatives, and Counselors.

Gap analysis is a method for assessing differences in performance between one variable and another. This is done to identify the difference between each variable and can be used to determine the next steps. Gap analysis can also be used to determine whether these requirements are successfully met, have not met some requirements, or have not met all requirements.

In this study, gap analysis is used to determine the gap between each variable in each research attribute. Very striking differences can occur because each variable has different strengths based on the opinions of the respondents. For example, the variable of learning duration where students feel online learning methods that are carried out for too long is considered ineffective and boring. With these findings, schools can take the necessary strategic steps. In this study, the gap analysis also involves the standard parameters used by the educational institution where this research is carried out.

As previously stated, the respondents in this study consisted of 200 students, 50 teachers, and 15 school administrators. By using the same questions, data showed the condition of schools based on the opinions of students, teachers, school administrators, and also experts. The chart below shows the research flow chart related to the effectiveness of learning activities during the pandemic.

Fig. 1. below is the stages carried out in the research; data collection with several assessment attributes such as Integrated Curriculum, Internet Network, Learning Time, Learning Duration, Learning Intensity, Interactive Material, Teacher Readiness, School Readiness, Online Platform, Home Visit Method, Blended learning, and Project-based Learning. In collecting data from respondents, the Linkert scale is used to determine each attribute's value, with 1 for the worst or lowest condition, 3 for a neutral condition, and 5 for the attribute condition with the best condition.

After obtaining the data from respondents, the existing data were analyzed using Importance Performance Analysis, ASIAP, and Gap Analysis. The IPA only uses the opinions of students and teachers to assess the level of service and the level of importance of each attribute. Meanwhile, the analysis of standards, importance, advisory, and performance (ASIAP) is used as a parameter of the balance of the opinions of the student and teachers, namely by including the opinions of experts (advisory) as well as the applicable standards in the educational institution where the research is carried out. The gap analysis identifies the disparity between each attribute to determine the strategic policies related to improving the existing services.

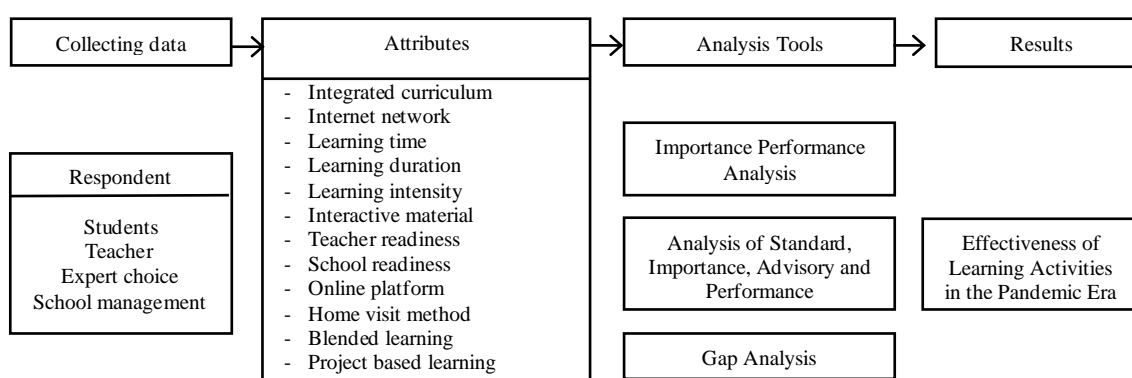


Fig. 1. Research stages.

In ASIAP, each parameter for each attribute is placed in a color matrix. This study divides the color into 3 groups, namely red for attribute conditions that need service improvement due to very bad conditions, yellow for poor average or neutral conditions, while green is for attribute conditions already good in service. After the calculated value is placed in the matrix provided in ASIAP, the lower limit value plus the upper limit is divided by three to make the range of each red, yellow and green color group.

IV. RESULTS AND DISCUSSION

The study on the level of effectiveness of learning during a pandemic used several research variables as questions in the online questionnaire through a google form. The variables or attributes include an integrated curriculum, internet network, learning time, learning duration, learning intensity, interactive material, teacher readiness, school readiness, online platforms, home visit methods, blended learning, and project-based learning. Table I below is the result of data collection tabulated into values that will be included in the IPA Cartesian quadrant and gap analysis.

Table II shows the distribution of each attribute in the IPA Cartesian diagram. Some of the attributes fall into quadrant I, the quadrant group that prioritizes improving performance such as internet network, learning duration, interactive material, school readiness, and project-based learning. Meanwhile, 4 (four) attributes fall into good service or quadrant II, namely curriculum, teacher readiness, home visit method, and blended learning.

One attribute falls into the low priority, namely, the online platform, while learning time and learning intensity are considered as attributes that have no effect and can be ignored. In general, some attributes should be increased based on the respondent's opinions, dominated by students who participated in learning activities during the pandemic, such as difficulties in internet networks and school unpreparedness. Interactive material was also one of the most coveted aspects, as boredom is a major hurdle when learning online.

TABLE I: CALCULATION OF RESPONDENT DATA FOR IMPORTANCE AND PERFORMANCE ATTRIBUTE

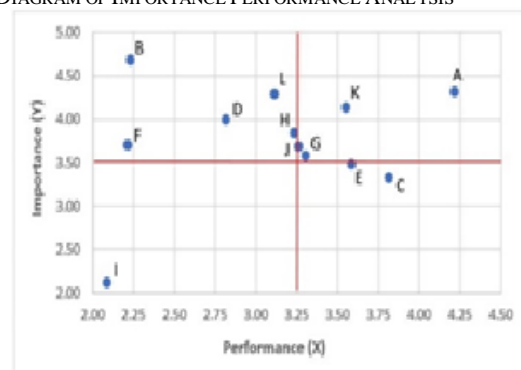
X	Importance Attributes	1	2	3	4	5	n Y	Value Y
A	Integrated Curriculum	10	0	50	75	115	1035	4.31
B	Internet Network	0	0	30	65	155	1125	4.69
C	Learning Time	54	22	50	69	55	799	3.33
D	Learning Duration	37	15	10	77	111	960	4.00
E	Learning Intensity	49	21	50	55	75	836	3.48
F	Interactive Material	17	35	65	58	75	889	3.70
G	Teacher Readiness	50	40	10	50	100	860	3.58
H	School Readiness	23	25	55	51	96	922	3.84
I	Online Platform	150	25	25	15	35	510	2.13
J	Home Visit Method	40	35	15	70	90	885	3.69
K	Blanded Learning	32	15	10	65	128	992	4.13
L	Project Based Learning	13	6	45	61	125	1029	4.29
X	Performance Attributes	1	2	3	4	5	n X	Value X
A	Integrated Curriculum	6	21	33	85	105	1012	4.22
B	Internet Network	90	80	40	35	5	535	2.23
C	Learning Time	20	25	55	70	80	915	3.81
D	Learning Duration	73	54	33	55	35	675	2.81
E	Learning Intensity	30	35	50	65	70	860	3.58
F	Interactive Material	117	55	33	20	25	531	2.21
G	Teacher Readiness	48	42	45	50	65	792	3.30
H	School Readiness	50	42	45	58	55	776	3.23
I	Online Platform	163	15	15	22	35	501	2.09
J	Home Visit Method	53	35	42	67	53	782	3.26
K	Blanded Learning	49	25	26	75	75	852	3.55
L	Project Based Learning	83	12	35	65	55	747	3.11

TABLE II: CALCULATION OF RESPONDENT DATA FOR STANDARD AND ADVISORY ATTRIBUTES

X	Standard Attributes	1	2	3	4	5	n Z	Value Z
A	Integrated Curriculum	-	-	-	-	-	-	5.00
B	Internet Network	-	-	-	-	-	-	4.00
C	Learning Time	-	-	-	-	-	-	3.00
D	Learning Duration	-	-	-	-	-	-	3.00
E	Learning Intensity	-	-	-	-	-	-	3.00
F	Interactive Material	-	-	-	-	-	-	5.00
G	Teacher Readiness	-	-	-	-	-	-	5.00
H	School Readiness	-	-	-	-	-	-	5.00
I	Online Platform	-	-	-	-	-	-	3.00
J	Home Visit Method	-	-	-	-	-	-	3.00
K	Blanded Learning	-	-	-	-	-	-	5.00
L	Project Based Learning	-	-	-	-	-	-	3.00
X	Advisory Attributes	1	2	3	4	5	n Y	Value Y
A	Integrated Curriculum	0	0	3	5	7	64	4.27
B	Internet Network	1	1	3	5	5	57	3.80
C	Learning Time	5	0	1	3	6	50	3.33
D	Learning Duration	2	4	1	4	4	49	3.27
E	Learning Intensity	3	1	3	3	5	51	3.40
F	Interactive Material	0	0	1	3	11	70	4.67
G	Teacher Readiness	0	0	1	1	13	72	4.80
H	School Readiness	0	0	1	0	14	73	4.87
I	Online Platform	4	1	1	4	5	50	3.33
J	Home Visit Method	3	2	2	3	5	50	3.33
K	Blanded Learning	0	0	1	4	10	69	4.60
L	Project Based Learning	3	1	3	2	6	52	3.47

TABLE III: VALUE OF ATTRIBUTES AND THE CARTESIAN DIAGRAM OF IMPORTANCE PERFORMANCE ANALYSIS

No	Attributes	X	Y	Z	α
A	Integrated Curriculum	4.22	4.31	5.00	4.27
B	Internet Network	2.23	4.69	4.00	3.80
C	Learning Time	3.81	3.33	3.00	3.33
D	Learning Duration	2.81	4.00	3.00	3.27
E	Learning Intensity	3.58	3.48	3.00	3.40
F	Interactive Material	2.21	3.70	5.00	4.67
G	Teacher Readiness	3.30	3.58	5.00	4.80
H	School Readiness	3.23	3.84	5.00	4.87
I	Online Platform	2.09	2.13	3.00	3.33
J	Home Visit Method	3.26	3.69	3.00	3.33
K	Blanded Learning	3.55	4.13	5.00	4.60
L	Project Based Learning	3.11	4.29	3.00	3.47



In the Analysis of Standard-Importance-Advisory-Performance (ASIAP), the average results of standard, importance, and advisory variables are compared with performance variables. This is done to know the level of attribute service compared with the level of importance, applicable standards, and experts' opinion. The initial calculation results have negative values on several attributes, indicating that the services received by respondents do not follow their wishes. To make it easier to understand, the results are added to the average attribute value, which takes the value of 3 as it is the middle value of the Linkert scale. The final results are then divided into three performance groups: poor performance for values of 0-2, adequate performance for values of 2-3, and good performance for values more than 3, and ranging from 3-5.

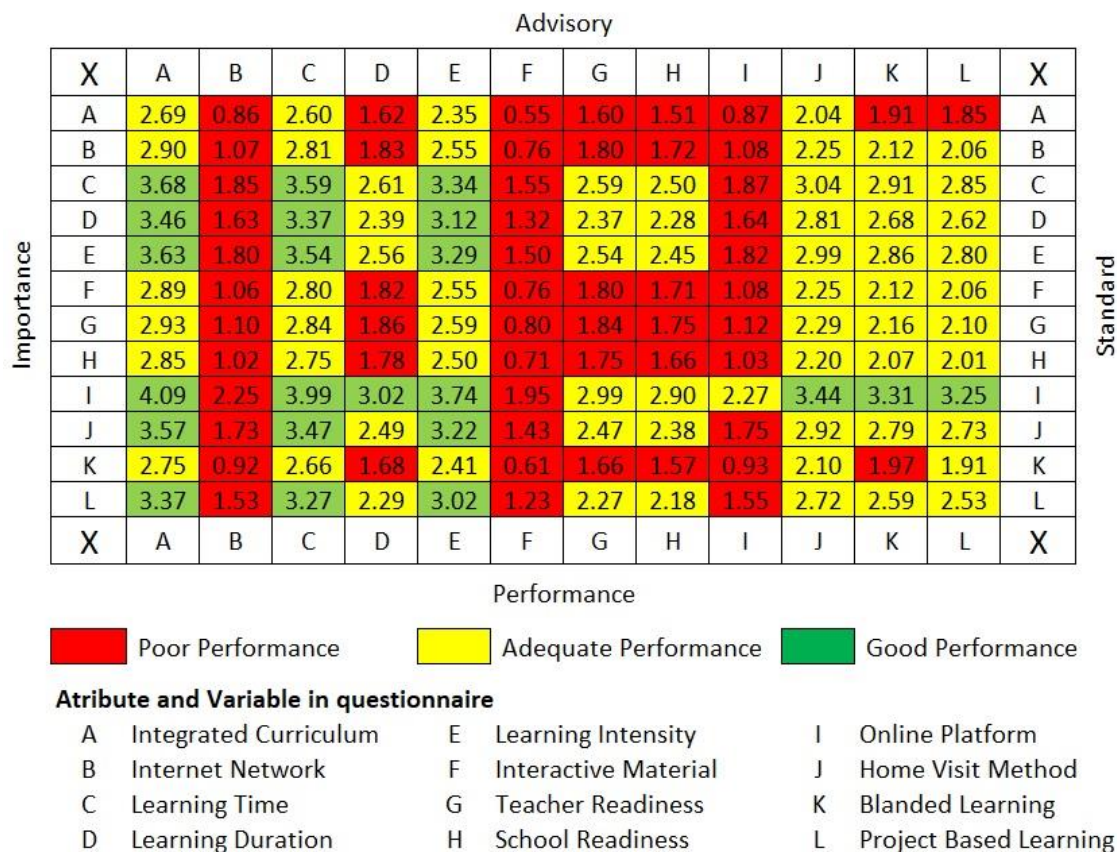


Fig. 2. Result of the analysis of standard-importance-advisory-performance.

The results obtained are slightly different from the Importance-Performance Analysis. With ASIAP, the attributes with poor service levels are internet network, learning duration, interactive material, teacher readiness, school readiness, and online platform. The analysis differs between ASIAP and IPA as ASIAP has an assessment from the experts, namely the Advisory variable and applicable service standards of the related school. Fig. 2. above is a gap diagram of each attribute in the study. If only the importance and performance are compared, only the opinions of the students can be obtained. On the other hand, when assessment from expert opinion and applicable service standards are also compared, it shows how the school's priorities are different from the respondents who are the students and teachers directly involved in learning activities during the pandemic.

One example is the opinion of experts and school directives (standard) regarding the attribute of 'interactive material.' Both the school and respondents give a very high value, more than 4.5. However, although this attribute is important, the value is not too high based on the respondent's opinion. When compared with the perceived performance by respondents, the services provided are low, only around 2.2. With the gap shown in the figure, it can be concluded that this attribute (interactive material) must be improved. This task falls on the teacher and also the school as a learning institution. Schools can train teachers to make better and more interactive modules and learning materials, especially by using online media.

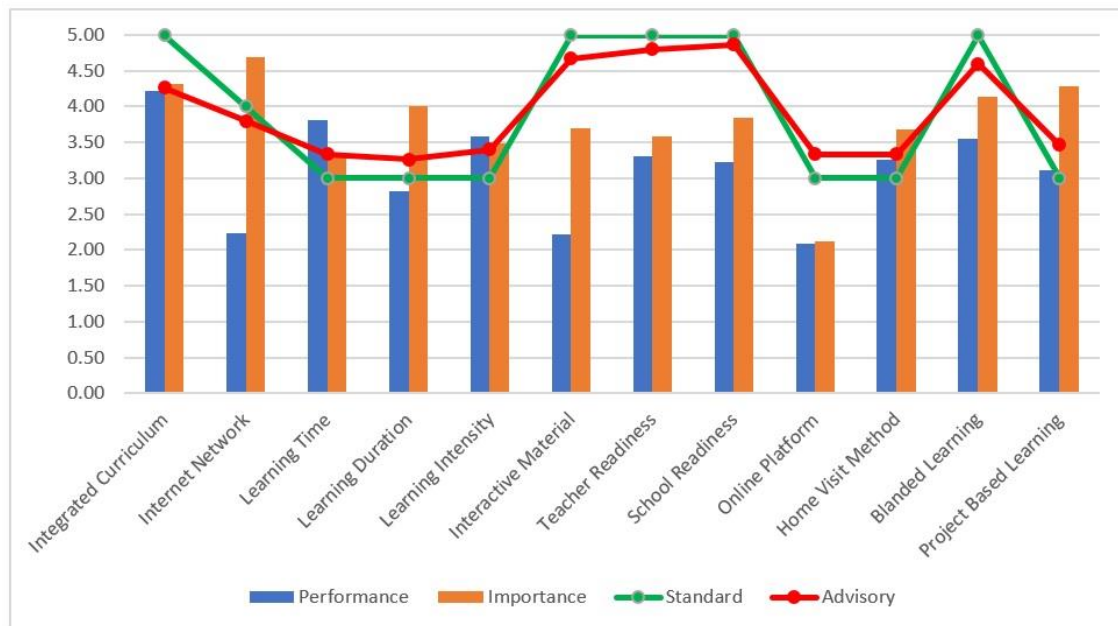


Fig. 3. Result of the GAP analysis.

Another interesting note in Fig. 2. above is that the school standard for each attribute is not drastically different from expert opinion. The value line for each attribute looks similar, with less than 0.5 difference. Only the curriculum attribute has a gap of more than 0.5, and this is because even though the school pays great attention to the curriculum, experts think that it is necessary to adjust the curriculum with updated learning methods according to the needs of learning during the pandemic.

V. CONCLUSION

Learning during a pandemic is unlike learning in normal times. During the COVID-19 pandemic, online learning was an option for schools, while direct and face-to-face learning in class must carry out health protocols according to government directions. Several conclusions regarding the level of effectiveness of learning during a pandemic can be obtained in regards to the availability of internet networks, lack of interactive learning materials, and the timing of learning that cannot be equated with learning during normal times.

Based on the IPA, GAP, and ASIAP methods, internet network is an attribute that must be improved. Likewise, with the learning material, which is hoped to be more interactive. Meanwhile, school readiness, teacher readiness, and online platforms are attributes that are unimportant for respondents. On the other hand, learning methods such as blended learning, home visit methods, and project-based learning are alternatives for students to stay motivated during online learning. For project-based learning, efforts need to be made to improve services; despite this learning method being important to respondents, the service still does not meet students' needs.

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CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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