



## **The Information System for Improving the Effectiveness of ECE Services During the COVID-19 Pandemic**

**Subhan**<sup>1✉</sup>

<sup>1</sup>Department of Islamic Early Childhood Education, IAIN Palopo, Indonesia

### **Abstract**

**Purpose** – The pandemic-era policy that requires schools to conduct face-to-face meetings is an issue that cannot be taken "lightly". The trend of face-to-face learning that has entrenched makes schools, including ECCE institutions, "profitable". There are not many alternatives that can be done, other than using online face to face applications that have been popular such as Whatsapp and other Messenger. However, the use of these applications cannot cover all Early Childhood Education (ECE) learning needs with their own characteristics that are generally different from learning at other levels of education. Therefore, a more suitable online learning system is needed such as through the Si-Pappa Information System/Application.

**Design/methods/approach** – For this purpose, in this study, the PAR (Participation Action Research) Method was used with assisted objects, namely 10 ECE Institutions in Palopo City which have been partners of the Islamic Early Childhood Education IAIN Palopo Study Program. Data collection methods utilizing Performance Tests are reinforced by unstructured interviews and direct observation.

**Findings** – The results of data analysis, the parameters of the results of the implementation of service were achieved, namely the average participant who was able to master the parameters of more than 83%. From this, it can be concluded that the Application of Information Systems (Si-Pappa) can improve the effectiveness of ECCE services during the pandemic in Palopo City.

**Research implications/limitations** – This study related to the problems of learning effectiveness during the COVID-19 pandemic.

**Practical implications** – The use of the Si-Pappa application allows parents to conduct direct and measurable consultations from the existing menu, making teachers provide methodical assistance because the video calls made are directly integrated into each participant's account so that it can be directly reviewed or confirmed from other menus such as authentic assessment conditions that show photos of children, flow charts or worksheets of learning activities, anecdotal notes related to special or unique conditions of children, and various other comparative data that can be used in determining mood conditions, causes used in making decisions to follow up to determine a wiser and more comprehensive solution for children.

**Originality/value** – The impact of teacher understanding of the concept of learning from home in the context of using applications is that teachers not only view learning applications such as Si-Pappa only as learning tools or media, but are able to appreciate the presence of applications as assistance partners that will make learning more effective.

**Keywords** Information system, Early childhood education, Pandemic period

**Paper type** Research paper

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✉ Corresponding author:

Email Address: [subhan@iainpalopo.ac.id](mailto:subhan@iainpalopo.ac.id)

Received: 30 October 2022; Revised: 29 November 2022; Accepted: 25 December 2022

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DOI: <http://dx.doi.org/10.14421/al-athfal.2022.82-07>

## 1. Introduction

Since the emergence of the Covid-19 pandemic in 2019, all educational institutions in Indonesia have had to adapt to the learning policies during the Covid-19 emergency. Through Circular No. 3 of 2020 and No. 4 of 2020, the government instructs all educational institutions to carry out learning from home online (in the network) (Nurkolis & Muhdi, 2020). Learning transitions in each institution are regulated based on the conditions and situation of the Covid-19 crisis in their respective regions.

The problem arises that in reality there are not many alternatives available for carrying out online learning. The reason is because the implementation of education so far in Indonesia has been dominated by face-to-face (offline) learning systems. The government actually does not have enough preparation to carry it out. Online learning is only carried out in a number of higher education institutions, it is rare to find online learning systems in school institutions. Even though the use of internet-based technology has been implemented, it is more for administrative and personnel purposes (Stratigos & Fenech, 2021; Singh, 2019) as a form of support for the managerial effectiveness of school institutions.

The fact that there are not many online learning alternatives available, forces the school to independently seek a number of IT platform system supports to carry out online learning. However, these systems cannot fully cover student learning needs (Anhusadar, 2021), especially learning in ECE, where the learning process has its own characteristics when compared to learning at other levels of education. Learning in ECE must be able to overshadow a learning system based on institutional and family ecosystems. Parents must participate both directly and indirectly in monitoring the growth and development of their children. This is often an obstacle because platforms must be able to effectively protect conceptual and technical knowledge for parents to balance the stimulation of learning carried out by teachers in schools.

So far, teachers have only used the WhatsApp application, which of course is limited to calling and messaging needs (Suhendro, 2020; Setyowahyudi, 2020). It is difficult to design learning resources and materials according to the learning theme in schools, teachers tend to be one way (one way delivered), integration of learning media in the form of video is very limited, it is difficult to carry out authentic assessments, and teacher-parent collaboration in a more productive learning ecosystem begins decreased because the design of learning from home (home schooling) is difficult for parents to translate, which is only conveyed by the teacher through the WA application (Wijayanti et al., 2021). Problems of motivation and mood for learning also tend to be different when children study at school and at home; this makes parents stressed (Agustin et al., 2021).

It should be acknowledged that so far teachers have only been able to provide written assignments and activity instructions that are paper based for students and parents to do at home (Satrina, et al., 2022), but this is not enough without being accompanied by detailed study instructions. complete. The intended application that can be applied as a solution is Si-Pappa (Child Growth and Development Reporting Information System). This application has been used for a long time at the Islamic Early Childhood Education IAIN Palopo Labschool which is intended to help simulate learning before students as prospective teachers go to real schools. Si-Pappa is a complete reporting system related to child growth and development along with stimulation from educators on a regular and real time basis both daily, weekly and even in one semester of learning implementation.

Information systems that bridge the occurrence of online learning are limited, so teachers don't have many choices to use information systems that really cover all aspects of learning activities in ECE institutions. So far, teachers have only used the Whatsaap application, of course, its designation is limited to calling and messaging needs. It is difficult to design learning resources and materials according to the learning theme in schools, teachers tend to be one way (one way delivered), integration of learning media in the form of video is very limited, it is difficult to carry out authentic assessments, and teacher-parent collaboration in a more productive learning ecosystem begins decreased because the design of learning from home (home schooling) is

difficult for parents to translate, which is only conveyed by the teacher through the WA application.

It should be recognized that in addition to the problem of incomprehensible delivery media, teachers basically have limitations, namely the low conceptual and technical ability to package learning resources and materials from home which can support students learning independently with assistance from their respective parents. Teachers are only able to provide written assignments and activity instructions that are paper based for students and parents to do at home, but this is not enough without being accompanied by complete study instructions; written, pictures, and videos as well as a number of other supporting tools that can be accessed practically by one door through an application that is more comprehensive and in accordance with aspects of children's learning activities at school.

The problem of motivation and learning mood tends to be different when children study at school and at home. This makes parents stressed because parents, who have limited instructions provided by the teacher, also do not have enough knowledge to carry out learning activities that are close to the quantity and quality of the implementation of learning as it happens in schools. This certainly has an impact on the quality of learning outcomes and stimulation of growth and development obtained by children and is quite dangerous if this condition lasts for a long time without an online learning system that is appropriate and in accordance with these conditions.

Based on the explanation of the problem above, the researcher through the application of the Si-Pappa application intends to target several research objectives, namely to provide teachers with the ability to carry out online learning using the Si-Pappa application. The Si-Pappa application helps teachers carry out learning that is able to cover all aspects of learning activities in ECE institutions, gives teachers the ability to design learning resources and materials that are in accordance with learning themes in schools, integrates creative learning media through a combination of text, images or videos, easily monitor student learning outcomes through authentic assessments, as well as the various menus on the Si-Pappa Application facilitating teacher-parent collaboration in a more productive student learning ecosystem, providing understanding to teachers and parents both conceptually and technically related to learning design learning from home (home schooling) so that the quantity and quality of learning at school is relevant to student learning activities at home under the assistance of parents and provides the ability for teachers and parents to transition differences in learning moods at school and at home with more instructions and learning scenarios complete information provided by the teacher through the Si-Pappa Application. This certainly helps reduce the stress levels of parents and students when carrying out online learning.

## 2. Methods

This research activity was carried out in two different locations according to the stages of research implementation. Phase II of the research implementation was carried out at Kopi Bisang Jl. Andi Djemma, Tompotika, Kec. Wara, Palopo City, South Sulawesi. Furthermore, for stage III, monitoring and evaluation will be carried out at TK Aisyiyah II on Jl. Andi Paso, Purangi, Kec. Sendana, Palopo City. The target of this research is the Partner Kindergarten/RA Institute of Islamic Early Childhood Education IAIN Palopo Study Program.

The method used in this research is the PAR (Participation Action Research) method with the object of assistance from a number of ECE institutions in the city of Palopo which have been partners of the Islamic Early Childhood Education IAIN Palopo Study Program. Its implementation in the field follows an implementation pattern that is adapted to the situation and conditions in the field as follows:

Phase I: The companion team identifies and maps problems implementing online learning (ECE services) during a pandemic. This is entirely on the partner subject, namely the TK/RA institution which is a partner of the Islamic Early Childhood Education IAIN Palopo Study Program. This determination is based on the results of preliminary interviews and is strengthened by the check list method to ensure a more structured mapping of the problem issues which are

the main benchmark for solving problems through this research. Stage II: The companion team carries out assistance to the selected assisted subjects with the phase I mechanism. Problem solving is provided in the form of implementing learning using the Si-Pappa Application which is carried out with limited scale partner subjects first (about 30% of the total number of selected assisted subjects). If the indicator is reached, it will be followed by widespread implementation of the partner subject as a whole. Stage III: The Assistance Team carries out follow-up and monitoring evaluations to see the progress of the implementation of learning with the Si-Pappa application, collects data to see its effectiveness and usefulness broadly on the assisted subjects.

Sources, techniques and data analysis are applied in order to be able to measure the achievement of research implementation targets. These targets include teachers being able to carry out online learning using the Si-Pappa Application, being able to design learning resources and materials in accordance with learning themes in schools, integrating creative learning media through a combination of text, images or videos, monitoring student learning outcomes through authentic assessments, teachers and parents have a conceptual and technical understanding of the design of learning to learn from home (home schooling) so that quantity as well as teachers and parents are able to transition the different learning moods at school and at home with more complete instructions and learning scenarios.

The main data source in this study were teachers delegated by the TK/RA Partners of the Islamic Early Childhood Education IAIN Palopo Study Program, a total of 20 people. The criteria for determining the source of this data are based on the objectives of conducting research and the escalation of learning problems in TK/RA based on the conditions of the problems in the field. These criteria include: becoming a partner subject, carrying out online or blended learning (a combination of synchronous and asynchronous) or full face-to-face with an analysis of the appropriateness and potential use of the Sipappa application for continuous improvement.

To collect data interviews were used which were applied to preliminary activities and reinforced by the check list method to ensure mapping of the problem to determine potential institutions to be participants in research activities. It is also so that the implementation of research is more structured with the issue of the problem which is the main benchmark for solving problems through this research. The method of carrying out this interview is in person and there is by telephone and social media with an unstructured interview format. The list of questions created to explore issues related to the effectiveness of implementing online learning includes (a) what are your opinions regarding the implementation of online, blended learning or face-to-face learning from home (b) what are the obstacles encountered in conditions such as point a including the completeness of facilities and infrastructure owned, and (c) the ideal implementation of learning expectations in these conditions.

Furthermore, to ensure a wider range of mapping, the research team also used an online checklist using the Google form by sending it directly to the TK/RA via email or social media as listed in the institution's main data at <https://dapo.kemdikbud.go.id>. The check list is basically to narrow down institutions that have the potential to be targeted for research in addition to strengthening the interview results from the point of view of perception and interest in using the Sipappa application. In general, checklist items come from aspects of the potential use of the Sipappa application such as perceptions of the effectiveness of using applications in online learning, the ease and difficulty of using online learning applications, the availability of networks and supporting electronic devices and the possibility of long-term use of applications.

Next is the Performance Test; This test generally concerns the teacher's understanding and skills in using the Sipappa application. The aspects of this test are (a) Teacher skills in carrying out online learning using the Si-Pappa Application, (b) teacher and parent skills in transitioning differences in learning moods at school and at home, (c) skills in designing learning resources and materials according to the learning theme in schools, integration of creative learning media through a combination of text, images or videos, monitoring student learning outcomes through authentic assessments, and (d) the skills of teachers and parents to have a conceptual and technical understanding of the design of learning to learn from home (home schooling).

Data were analyzed using descriptive techniques to see the achievement of research objectives. The data from the unstructured interviews were analyzed by looking at the substance pattern of the respondents' answers by paying attention to the level of novelty, depth and direct relevance to the needs of the research application. In short, so that the research team can ensure that TK/RA institutions have potential and meet the criteria for determining assisted subjects along with an overview of the problems in implementing learning while using online learning or blended learning (synchronous and asynchronous).

Meanwhile, for the checklist, it consists of several core aspects to be measured, namely (1) the perceived effectiveness of using applications in online learning, (2) the ease and difficulty of using online learning applications, (3) the availability of networks and supporting electronic devices and (4) the possibility of long-term use of the application. Each of these aspects consists of 3 check list items so that the total items are 12 items. Items are measured through a scale of 1-4; 1 (TS/Disagree), (KS/Disagree), (S/Agree), SS/Strongly Agree). To ensure that all aspects are covered properly, the check list includes additional columns so that respondents can write additional information that is considered important that is not covered through the scale presented in the instrument.

### 3. Result

#### *3.1. Conceptual and technical understanding of the design of learning from home (home schooling)*

Learning from home during the pandemic caused many TK/RA and equivalent institutions to make transitions. Face-to-face learning develops into online learning both synchronously and asynchronously. In a more extreme form, learning is even carried out fully online or completely eliminating face-to-face, by carrying out task-based (paper-based) learning (Anhusadar, 2021). Or learning is carried out in a more flexible form, for example a combination of online-offline through the concept of combined learning or known as blended learning.

The design of learning from home reinforces the essence of using an application which basically connects learning at school and the supporting stimulation carried out by parents at home. Parental involvement in this study was replaced with teacher involvement, because the interaction of the context of the interests of students at school always places the teacher, teacher initiative plays a major role in parental behavior, teachers have the psychological and technical power to influence parents about what they should do (responsibility). responsible for education) at home related to support for student success in learning (Taliawo et al., 2019) so this study focuses on the size of this aspect parameter from the teacher's perspective only, taking into account the teacher's statement regarding the description of parents' attitudes or behavior regarding these parameters .

In this regard, the Sipappa Application, which is an online learning application, connects aspects of distance learning, so its success depends on how teachers understand home schooling, namely learning from home (Wijayanti et al., 2021) along with appropriate learning designs. The research team made parameters for this achievement, namely in the context of improving ECE services through three things, namely how teachers understand the concept of learning from home (home schooling), transitions in learning mood and how their skills make learning devices from home.

The teacher understands the basic concept of learning from home (home schooling) for children. These performance items were mastered by all participants in this study. Teachers have demonstrated a good understanding of the basic concept of learning from home, what influences it, procedures and implementation designs from an informal learning perspective and matters related to this. These sections were well mastered by 100% of the participants. If you pay close attention, competencies related to understanding (theoretical) have been well mastered, but skills related to participants' ability to make core tools still need further training. This is because 1 person (6%) has not been able to master the parameters measured in this study. Better teacher mastery of matters related to concepts (information/knowledge) can be seen in the tendency to



use social media which in general only exchanges and disseminates information and this has become a choice of learning platforms during a pandemic (Eko Suhendro, 2020) (Sholihatun et al., 2020) (Riadil et al., 2020) when compared to tools developed specifically for learning such as Virtual Reality (Ariyana & Tristananda, 2021) which require slightly more technical skills based on actual learning characteristics as used by kindergarten Singaraja Love Lamp.

That is why, the concept of learning from home (home schooling) that underlies learning from home platforms like Si-Pappa is designed to have conveniences like social media but still carries complete technical learning equipment based on the characteristics of early childhood learning. This is the key reason, how do teachers understand the concept of learning from home, especially in the two aspects of understanding which are parameters in the aspect of "conceptual and technical understanding regarding the design of learning from home (home schooling) in this study" can be of interest and easily mastered by teachers, unless the parameters for designing home schooling tools require follow-up assistance for 6% or 1 of the 17 teachers involved as participants in this research activity.

The impact of the teacher's understanding of the concept of learning from home in the context of application use is that teachers do not only view learning applications such as Si-Pappa only as learning tools or media, but are able to appreciate the presence of applications as partners who will make learning more effective. Teachers are starting to realize that it is important to carry out quality and essential learning from home with the characteristics of early childhood education and this is impossible without tools that can directly connect teachers and parents in more complex and complete learning contexts such as those available in Si-Pappa. Dependence in the context of this need has an impact on teachers' concern for the application so that this guarantees that they (teachers) will continue to use the application, expand benefits according to the needs of distance learning including from home and the possibility of becoming a friendly and inexpensive source of learning and learning for students. Teachers like their reliance on the use of social media in social interaction. From here we can draw a common thread that there is a need for a solid foundation of understanding that departs from the real needs of teachers to make learning technology effective and used in the long term.

### *3.2. Teacher Skills in Implementing Online Learning Using the Si-Papa Application*

The sense of mutual dependence that arises from the guarantee of fulfilling the needs of the Si-Pappa Application has a major influence on the enthusiasm of teachers in learning how to use the Si-Pappa Application. The research team saw the enthusiasm of the teachers in paying attention to the material presented by the presenters related to the basic understanding of using the Si Pappa application and the effectiveness of learning services in TK/RA. The massive number of questions in the discussion with the speakers is a sign that how teachers really need the presence of the Si-Pappa application as an alternative learning that fits the learning needs of children in TK/RA where the research participants teach. We can see that of the three parameters, there are parameters 2 and 3 where there are participants who have not been able to master them properly. These parameters are the ability to operate the menu, select and fill in the menu according to its designation and the ability to create accounts including logging in and out of accounts in the Si-Pappa system.

Three parameters measuring the teacher's skills in carrying out online learning using the Si-Pappa Application mentioned above, the participants had the most difficulty when operating the menu and filling in the menu according to its designation. Followed by the ability to create an account; including in terms of logging in and out of each account. However, numerically the number exceeded 80% of the participants (17 people) who took part in the research activities, this indicated that the skill aspect of implementing online learning had been well mastered by the participants in general. As for some that have not been able to be followed up according to their level of difficulty.

From the results of the research team's reflection, that 2 participants who were not yet capable in the parameters of the ability to operate the menu; choosing a menu according to its designation and filling in and adjusting the contents of each menu as needed is due to the personal (congenital) ability of the teacher. In addition, when looking at the trend of participation, those

who are able to master research competencies are usually those (participants) who become operators of institutions at work, because of their habit of managing school dapodik data both online. In addition, related to resilience in learning, the younger the age of the participants, the faster the learning ability of new things plus the high enthusiasm for learning made it very easy for the participants to be directed step by step in mastering the Si-Pappa Application menu. On the other hand, participants who are actually older in age have slower absorption and decreased learning motivation, so it is necessary to seek learning with a better andragogical approach so that the competencies targeted in research can be well mastered. From this it can be understood that the use of learning applications such as Si-Pappa requires high motivation and learning power and this is shown by research participants who are younger and have the carrying capacity of previous abilities and skills that have been carried out in institutions.

Basically, everything can be trained so that it gradually becomes a habit for the participants over time and the popularity of using the Si-Pappa application among participants continues to increase. It can be seen that those who were declared capable also at first they could only log in and logout, added a little to the function of each menu. Along with massive use, it can be seen when monitoring and evaluating the participants that most of the participants have been able to fill out their accounts and use them even though it is still at a simple level, for example only uploading several daily implementation plans, then integrating learning media in the form of images whose layout still needs to be improved. From this, the unique thing is that when creating an account, some participants provided an inactive e-mail, and filled in the wrong username and password that would be used to log in to the application. This was experienced repeatedly by two participants who were still unable to, namely they still had difficulty verifying their email and often forgot to fill out the complete form, sometimes not remembering the username and password that had been created.

In addition to the obstacles in filling out each menu according to learning needs, the research team always ensured that all participants had to master the main menu on the dashboard, the menus attached were important announcements, chat with teachers, video calls with parents, students and blog about parenting Furthermore, in the main menu there are class A and class V directly equipped with themes and learning resources in them. For other menus, for example the menu for the guest book and other administration can be accessed directly from the main menu.

The level of effectiveness seen from the three parameters as explained above can be said to be good, this is supported by data that more than 83% of participants have been able to use the Si-Pappa Application from the perspective of predefined parameters such as basic menu use, menu functions and account creation as well as login and logout access. From these parameters, ECE services can be said to be increasing or effective.

### *3.3. Skills in designing learning resources and materials according to the theme of learning in schools, integrating creative learning media through a combination of text, images or videos, monitoring student learning outcomes through authentic assessment*

The skills to design learning resources and materials that are appropriate to the learning theme in this school are based on the Sipappa application. Learning resources and materials must be contained in the theme or topic menu in the user's account, so basically just moving what is textually used at the institution so far into the application so that it is more accessible. Likewise with the integration of creative learning media through a combination of text, images or videos; it is also available so that the ability of participants to customize is needed. If the video integration is more than 10 MB, it can be done using an external link technique. Furthermore, monitoring student learning outcomes through authentic assessments can also be carried out directly with the same work system as the portfolio assessment model, assessing in complex ways and sources but at the right time and target of the assessment and immediately.

Parameters of the ability to design learning resources and materials in accordance with the theme there are 3 people or 18% of participants who are not capable of these competencies. While 14 people or 82% have been able to design learning resources and materials according to the theme. Inability is basically only caused by not understanding how to integrate (custom) learning

resources into applications. So it is more a matter of technical usage, but in substance the participants have understood how interactive learning resources and materials are used through these applications which are of course different from conventional or face-to-face learning resources and materials in the classroom.

Furthermore, the ability to integrate creative learning media through a combination of text, images or videos (external links). This performance item has not been mastered by 3 participants or around 18%. The obstacle is still a technical problem, even though on average the participants already know and are able to make it in conventional learning. The process of pouring into the application is still a problem, because interactive learning media is the same as pouring learning resources and materials. Participants who are incapable of learning media and materials are also incapable of this item because they have the same constraints in terms of technical use of the application. This item is the achievement of the participants that most needs to be considered because it is included in the category of the most participants who are unable to complete it.

On the parameter of the ability to monitor and report children's learning outcomes through authentic assessment. The aspects and points of this performance have been achieved in general by all participants. Only 1 participant was not able to. In general, participants were able to directly document the assessment through photos and videos and this was immediately reported to the parent's account. The aspect of assessing complex growth and development instantly and immediately (on the spot) is the role of authentic assessment so that it is very relevant to the Sipappa application. One person has not been able to do so because they are still constrained by the network because the uploaded file size exceeds the capacity so that participants have difficulty authenticating the assessment. On the other hand, these participants still do not understand the nature of authentic assessments and are still overshadowed by conventional assessments. So it's more to the problem of changing habits and this is still an obstacle, especially conservative teachers who incidentally are in late adulthood, for example over 50 years.

### *3.4. Transition skills for different learning moods at school and at home*

The skill of transitioning differences in learning moods is very important because it is the main problem that must be understood in supporting the learning process during a pandemic. Mood is part of the child's social-emotional aspects which are very closely related to the learning environment and learning aspects. The ability to transition moods, equalize the frequency of feelings, interests and motivation in the learning process carried out by teachers or parents at home and at school is the key to the success of children learning remotely (online).

Nevertheless, basically this is no longer a major obstacle, because the transition to the status of Covid-19 in Indonesia is back to normal so that learning methods are carried out in a variety of ways, no longer full online but more towards blended learning patterns, namely a combination method of implementing online and offline as needed or even now it has gradually gone offline in face-to-face form. However, as explained in another section of this report, this remains the concern of the research team because this shift in learning mood is important as a psychological basis for implementing the long-term use of the Si-Pappa application in TK/RA institutions.

When the pandemic was at its peak, more learning activities were carried out from home. This certainly made children's learning mood unstable, many children experienced psychological pressure because the atmosphere and learning environment were not as conducive as at school. Parents do not have sufficient capability to carry out learning from home so that more or less has an impact on learning power, motivation, ultimately negatively affecting children's mood in learning. Transition skills are important to master, transitions balance children's conditions at home and at school which of course the child's productivity in terms of learning outcomes is largely determined by the relevant environment because what the teacher teaches at school must also be translated and stimulated to children when they are at home.

If one looks at the teacher's actions at school in relation to this mood transition, then the teacher basically knows more about this than one might think. The ability to transition between differences in students' learning moods at school was mastered by 94% of the study participants.



These parameters indicate that the mood for learning at school has been able to be transitioned by most teachers, but when viewed from the achievement rate of transitioning the mood for studying at home, this is a little more difficult than the mood transition attempted at home. This is possible because it is related to the number of students being assisted, this reduces the exclusivity of the assistance. but this did not have much effect because the difference was only one participant who was unable to do this item when compared to the previous item.

The Si-Pappa application provides video call facilities between teachers and parents. This facility is at least used as a means of direct discussion by parents and teachers regarding the problem of children's mood transitions. From the results of in-depth interviews, most of the teachers acknowledged that mood is a child's personal problem, related to personality, related to tentative situations and conditions, the triggers sometimes seem trivial but actually have accumulated from situations that have made them bored and stiff for a long time. The use of the Si-Pappa application allows parents to carry out direct and measurable consultations from the existing menu, allows teachers to provide methodical assistance because the video calls made are directly integrated into each participant's account so that this can be immediately reviewed or confirmed from the menu- other menus, for example authentic assessment conditions showing photos of children, flow charts or worksheets of learning activities, anecdotal notes related to special or unique conditions of children, as well as various other comparative data that can be used to determine mood conditions, causes used in make a decision to follow up to determine a wiser and more comprehensive solution for the child.

#### 4. Discussion

The discussion regarding the effectiveness of educational services is not something new. This will always include fundamental things such as educational goals, quality standards, evaluations or policies where studies on these matters have been carried out for a long time. However, perhaps something that makes the effectiveness of this service always worth reviewing is the fact that the implementation of education continues to develop in a complex manner (Morley & Rassool, 2013). As a result, to keep pace with these developments, scientific studies in terms of the adjustment and importation of education must continue including the substance of matters in it, especially learning outcomes (outcome) which is the goal of service effectiveness.

Literally, the word effectiveness refers to the meaning of the word effectiveness (n) which reflects conditions achieved within a certain time (Setiawan, 2021). Effectiveness refers to the achievement or completion of something or work in a short time. In the realm of the effectiveness of educational services, effectiveness can be interpreted in terminology, namely the achievement of the educational goals of the services provided based on the targeted deadline. In addition to measuring the achievement of goals based on time, the effectiveness of educational services is also related to the achievement of educational goals based on the proper management of "doing the right things" situations (Rohmawati, 2015).

Reviewing the effectiveness of services, especially in the field of education, in addition to the things described above, can formulate the substance of the effectiveness of educational services based on the factors that influence it. As a public service the effectiveness of educational services is determined by trust in the system, policy interventions, and ideological developments (Morley & Rassool, 2013). Trust in something causes knowledge to increase, and forms a direct perception of integrity (Sayekti & Baridwan, 2016). The effectiveness of this aspect is seen as a "bond" on the basis of trust in efforts to realize the goals to be achieved and to go through the process to be carried out. Achievement of goals as a result of efforts to realize goals and fulfill processes based on trust that is born from sufficient knowledge about the system and perceptions of integrity that make confidence at its peak.

Next, we can also reflect on the effectiveness of government policies to intervene in a public service. The policy of the ministry of education, for example, in terms of implementing the 2013 curriculum in an effective manner, the government has made efforts to increase teacher competence and the adequacy of the availability of educational facilities down to the school level.

In addition, interventions were also carried out in terms of management and integrating the use of practical information technology (Elyana & Fitriati, 2021) to speed up services (Indriyanto, 2012). From here, we can see the government's positive penetration in terms of its policy power to carry out "public control", namely controlling a public service which is generally for the common good, in the midst of a storm of protests and disharmony among various parties over the choice of these services. Implicitly here we may be able to understand that the effectiveness of services is related to the guarantee of government policy support in various matters, such as dynamic and adaptable management, practical information technology support, supporting HR competencies and efforts to integrate the required facilities and infrastructure.

Ideological developments in the field of education also provide opportunities for changes in the effectiveness of educational services. Ideology is not only the subject of discussion in academic forums, ideology plays an important role in formulating pedagogical foundations for the implementation of education to the institutional level (Hidayat, 2017). Evidently, the development of ideology that is used as the basis for the implementation of education in Indonesia often causes changes in the curriculum and educational model (Aini, 2017). For this reason, the effectiveness of educational services in this context is interpreted as something dynamic, according to conditions, needs and trends in the development of thought. From here, effectiveness means the ability to change and continuously adjust services according to dynamic situations and conditions. In terms of education, effectiveness means adjusting goals with the process of providing education, including with scientific developments and adaptation to the needs of the world of work and stakeholders.

Since the emergence of the Covid-19 pandemic in 2019, all educational institutions in Indonesia have had to adapt to the learning policies during the Covid-19 emergency. Through Circular No. 3 of 2020 and No. 4 of 2020, the government instructs all educational institutions to carry out learning from home online (in the network) (Nurkolis & Muhandi, 2020). Learning transitions in each institution are regulated based on the conditions and situation of the Covid-19 crisis in their respective regions.

The problem arises that in reality there are not many alternatives available for carrying out online learning. The reason is because the implementation of education so far in Indonesia has been dominated by face-to-face (offline) learning systems. The government actually does not have enough preparation to carry it out. Online learning is only carried out in a number of higher education institutions, it is rare to find online learning systems in school institutions. Even though the use of internet-based technology has been implemented, it is more for administrative and personnel purposes (Stratigos & Fenech, 2021) (Singh, 2019) as a form of support for the managerial effectiveness of school institutions.

The fact that there are not many online learning alternatives available, forces the school to independently seek a number of IT platform system supports to carry out online learning. However, these systems cannot fully cover student learning needs (Anhusadar, 2021), especially learning in ECE, where the learning process has its own characteristics when compared to learning at other levels of education. Learning in ECE must be able to overshadow a learning system based on institutional and family ecosystems. Parents must participate both directly and indirectly in monitoring the growth and development of their children. This is often an obstacle because platforms must be able to effectively protect conceptual and technical knowledge for parents to balance the stimulation of learning carried out by teachers in schools. Moreover, if there is a learning platform, it needs a varied and functional container, supported by a guidebook that is easy for parents to understand and of course there must be regular and planned training, all of which require a lot of time and material support (Watini, 2022).

So far, teachers have only used the Whatsapp application, which of course is limited to calling and messaging needs (Eko Suhendro, 2020; Rendi Setyowahyudi, 2020). It is difficult to design learning resources and materials according to the learning theme in schools, teachers tend to be one way (one way delivered), integration of learning media in the form of video is very limited, it is difficult to carry out authentic assessments, and teacher-parent collaboration in a more productive learning ecosystem begins decreased because the design of learning from home

(home schooling) is difficult for parents to translate, which is only conveyed by the teacher through the WA application (Wijayanti et al., 2021). Problems of motivation and mood for learning also tend to be different when children study at school and at home; this makes parents stressed (Agustin et al., 2021).

It should be acknowledged that so far teachers have only been able to provide written assignments and activity instructions that are paper based for students and parents to do at home but this is not enough without being accompanied by detailed study instructions. complete. The intended application that can be applied as a solution is Si-Pappa (Child Growth and Development Reporting Information System). This application has been used for a long time at the Islamic Early Childhood Education IAIN Palopo Labschool which is intended to help simulate learning before students as prospective teachers go to real schools. Si-Pappa is a complete reporting system related to child growth and development along with stimulation from educators on a regular and real time basis both daily, weekly and even in one semester of learning implementation.

Learning from home during the pandemic caused many TK/RA and equivalent institutions to make transitions. Face-to-face learning develops into online learning both synchronously and asynchronously. In a more extreme form, learning is even carried out fully online or completely eliminating face-to-face, by carrying out task-based (paper-based) learning (Anhusadar, 2021). Learning is carried out in a more flexible form, for example a combination of online-offline through the concept of combined learning or known as blended learning.

The dynamics of the learning transition color the polarization of the trend of learning development research during the pandemic, especially at the early childhood education level, such as Kindergarten/RA or equivalent. Of course the use of internet-based technology is the only media that might be appropriate for the government to formulate a strategic policy to address this problem (Nurkolis & Muhdi, 2020), namely overcoming space and time limitations, and supporting the health protocol policy campaigned by the government. The use of this technology is widespread, transforming all lines of government services to maintain service effectiveness and efficiency (Mustafa et al., 2020).

In general, many teachers use social media such as WhatsApp (WA) groups (Eko Suhendro, 2020). This type of social media is one of the most popular in the world. As of April 14, 2022, there are more than 2 billion active users and Indonesia ranks 3rd (Iqbal, 2022). Kindergarten/RA teachers use the application because they are familiar with its daily use. In addition, the features provided are easy to use and complete for verbal and oral communication, such as features for sending videos, photos, voice recording, sending files, and also group video calls (Riadil et al., 2020). Specifically for using videos from WhatsApp, videos contain teacher-teaching activities in class, then shared with parents to accompany their children based on the instructions in the video (Syafi'i et al., 2020; Agustin et al., 2021). It covers communication needs, especially basic communication needs such as calling and messaging. However, the typical needs in the context of learning in ECE are slightly different, even though the subject matter & assignments can be shared & sent practically by the teacher, but the teacher does not know who is responding or not, it is very difficult to do authentic grading and assessment because sometimes the names do not match attendance (principal student data). Grouping important aspects of learning is difficult, teachers are not able to control children one by one because all of them are mixed in one group (Riadil et al., 2020). This condition has the potential to cause a high intensity of information bias which further has the potential for wrong values, erroneous feedback and finally blurring learning objectives.

In line with the use of WA, there is also the use of Zoom and Google Meet as online learning tools during the pandemic in TK/RA. (Sholihatun et al., 2020). These facilities are mainly to be able to carry out face-to-face meetings between teachers and children, which are synchronous. The use of this media is also massive, but it requires a high internet quota or internet access via wifi so that the application can run properly. Applications are also only face-to-face, unable to manage learning more than that, for example sharing files, videos, and other aspects related to complete learning aspects.

In a small number of learning cases during the pandemic, Pelita Kasih Singaraja ECE is an example of an institution that does not implement social media as the only remote learning option (Ariyana & Tristananda, 2021). They use a platform called Augmented Reality. Is a technology that is able to present reality into 3D learning content that can be accessed by children and parents from home (Indrawan et al., 2021) so that it is possible to see virtual objects (Cahyaningtyas, 2020), which are modified according to physical reality (Prasetyo, 2021) based on multiple representations (multi-representation) (Rizal et al., 2022). This virtual-reality technology is an advance in the use of technology in ECE learning in particular, because not many have adequate human resources and capital strength. However, from research reports on the use of Augmented Reality, there are deficiencies that often become obstacles, such as not all reality content can be virtualized into applications (3D), it takes a long time to create learning content that is in accordance with complex technical considerations such as lighting, coloring, the breadth and depth of the theme, the teacher's skills as a virtual messenger and so on.

The above is different from what happens in remote areas where technology is very difficult to reach (Kartini, 2021). There is almost no internet network, coupled with grassroots problems such as low economic levels and "technology literacy" for marginal and rural communities (Wijoyo & Indrawan, 2020). For this kind of thing, the government cooperates with TVRI services. Distance learning broadcast by TVRI began on April 13, 2020 (Setyowahyudi, 2020). In a series of programs, there is material content provided in programs such as the Learning from Home Program (Astini, 2020). After watching TVRI shows, children are asked to fill in the worksheets provided by the teacher, apart from that the teacher also provides reinforcement regarding the shows the children have watched (Imaduddin et al., 2021). The child growth and development reporting information system (Si-Pappa) is a learning management information system based on the Moodle (Modular Object Oriented Dynamic) application. Moodle is a software package produced for internet-based learning activities and websites that uses the principles of social constructionist pedagogy (Herbimo, 2020). Application-based independent learning (e-learning) which connects complete learning components and can be customized as needed. Moodle itself is very user-friendly to use so it can be used easily by various groups (Memon & Rathore, 2018).

Moodle-based e-learning users continue to expand. This platform is widely used from university to school level for the reason that the platform and tools provided are in accordance with the universal learning climate so that they can be customized (custom) to the needs of each user (Athaya et al., 2021). At universities, this platform is mainly used for lecturer-student distance learning access, besides being developed for the administration of learning (Ngibad et al., 2020). Menus for grading, attendance, peer teaching and others help manage learning at the university. Likewise at the school level, its use is starting to be massive, moodles are customized with various goals and needs, starting from being used as learning media (Ika et al., 2022), teacher-parent virtual learning support (Nuryati et al., 2021), as a complement (supporter) for the use of social media in learning such as Google Classroom, WA group, Zoom, Cisco Webex, Google Duo (Ma'mun & Maryam, 2021), or used as a creative learning resource (Hardjito, 2022).

## 5. Conclusion

The policy during the pandemic that required schools to conduct face-to-face meetings was a problem that could not be taken lightly. The entrenched trend of face-to-face learning makes schools, including ECE institutions, "at a loss". There are not many alternatives that can be done apart from using face-to-face online applications that have been popular so far, such as WhatsApp and other messengers. However, the use of these applications cannot cover all the learning needs of ECE because they have their own characteristics that are generally different from learning at other educational levels. Therefore, a more appropriate online learning system is needed, such as through the Si-Pappa Information System or Application. For this purpose, this research used the PAR (Participation Action Research) method with the assisted objects, namely 10 ECE institutions in the city of Palopo that have been partners of the Study Program of Islamic Early Childhood Education IAIN Palopo. The method of collecting data using the Performance Test is strengthened by unstructured interviews and direct observation. Furthermore, the collected data were

analyzed using descriptive statistical techniques with a minimum achievement standard of 83% of the 17 participants who took part in the research activity. From the results of data analysis, the parameters for the success of the research implementation were achieved, namely that the average participant who was able to master the parameters was more than 83%. From this, it can be concluded that the Application of Information Systems (Si-Pappa) can increase the effectiveness of ECE services during the pandemic in Palopo City.

## Declarations

### Author contribution statement

Subhan the presented idea and data taker, developed the theory of Information System in Improving the Effectiveness of ECE Services During the Covid-19 Pandemic, and discussed the results and contributed to the final manuscript.

### Funding statement

This research was supported by the Directorate of Islamic Religious Higher Education through the Institute for Research and Community Service IAIN Palopo.

### Data availability statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

### Declaration of interests statement

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

### Additional information

Correspondence and requests for materials should be addressed to [subhan@iainpalopo.ac.id](mailto:subhan@iainpalopo.ac.id).

### ORCID

Subhan  <https://orcid.org/0000-0002-0215-2716>

## References

- Agustin, M., Puspita, R. D., Nurinten, D., & Nafiqoh, H. (2021). Tipikal Kendala Guru PAUD dalam Mengajar pada Masa Pandemi Covid 19 dan Implikasinya Abstrak. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(1), 334–345. <https://doi.org/10.31004/obsesi.v5i1.598>
- Aini, R. (2017). Titik Temu Ideologi Pendidikan Islam Konservatif dan Liberal. *EDUKASIA ISLAMIKA Jurnal Pendidikan*, 2(2), 230–251. <https://doi.org/10.28918/jei.v2i2.1670>
- Anhusadar, L. O. (2021). Efektivitas Pembelajaran Online Pendidik PAUD di Tengah Pandemi Covid 19. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(1), 686–697. <https://doi.org/10.31004/obsesi.v5i1.699>
- Ariyana, I. K. S., & Tristananda, P. W. (2021). Pemanfaatan Augmented Reality sebagai Media Pembelajaran Inovatif pada Masa Pandemi Covid-19 di PAUD Pelita Kasih Singaraja. *Prosiding Seminar Nasional Dharma Acarya Ke-2, September*, 45–55. <http://jurnal.stahnmpukuturan.ac.id/index.php/dharmaacarya>
- Astini, N. K. S. (2020). Pemanfaatan Teknologi Informasi dalam Pembelajaran Tingkat Sekolah Dasar pada Masa Pandemi Covid-19. *Jurnal Lampuhyang*, 11(2), 13–25.
- Athaya, H., Nadir, R. D. A., Sensuse, D. I., & Kautsarina, K. (2021). Moodle Implementation for E-Learning: A Systematic Review. *SJET '21: 6th International Conference on Sustainable Information Engineering and Technology 2021*.
- Cahyaningtyas, A. S. (2020). Pembelajaran Menggunakan Augment Reality untuk Anak Usia Dini di Indonesia. *Jurnal Tekonologi Pendidikan*, 5(1), 20–37. <https://e-journal.undikma.ac.id/index.php/jtp/article/view/2850/1979>



- Satriana, M., Buhari, M. R., Maghfirah, F., & Haryani, W. (2022). Persepsi Guru PAUD terhadap Pembelajaran Online : *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(1), 362–373. <https://doi.org/10.31004/obsesi.v6i1.1353>
- Eko Suhendro. (2020). Strategi Pembelajaran Pendidikan Anak Usia Dini di Masa Pandemi Covid-19. *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, 5(3), 133-140. <https://doi.org/10.14421/jga.2020.53-05>
- Elyana, L., & Fitriati, R. (2021). Manajemen Teknimedia PAUD Era Pandemi Covid 19. *Sentra Cendekia*, 2(1), 6–11. <http://e-journal.ivet.ac.id/index.php/sc>
- Hardjito, K. (2022). Strategi Pembelajaran Dalam Mengatasi Kendala Belajar Statistika di Masa Pandemi Covid-19. *TEACHER: Jurnal Inovasi Karya Ilmiah Guru*, 2(1), 65-72. <https://doi.org/10.51878/teacher.v2i1.1107>
- Herbimo, W. (2020). Penerapan Aplikasi Moodle Sebagai Salah Satu Model Pembelajaran Jarak Jauh di Masa Pandemi. *Jurnal Karya Ilmiah Guru*, 5(1), 107–113. <https://jurnal-dikpora.jogjaprov.go.id/index.php/jurnalideguru/article/download/144/163>
- Hidayat, F. (2017). Pertumbuhan Ideologi Pendidikan di Era Reformasi. *Literasi*, VIII(2), 85–98. <https://ejournal.almaata.ac.id/index.php/LITERASI/article/view/584/434>
- Ika, N., Rakhmawati, S., Mardiyah, S., Fitri, R., & Laksono, K. (2022). Pengembangan Learning Management System ( LMS ) di Era Pandemi Covid-19 pada Pendidikan Anak Usia Dini. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(1), 107–118. <https://doi.org/10.31004/obsesi.v6i1.991>
- Imaduddin, M., Nihayati, L., Nugroho, T. W., Murti, W. B., Sa’adah, L., & Kurniasari, D. (2021). Pendampingan Pembuatan Alat Permainan Edukatif Topik Ekologi Berbasis STEAM pada Kelompok Guru PAUD Kecamatan Temayang Kabupaten Bojonegoro. *Transformasi: Jurnal Penelitian Masyarakat*, 17(1), 27–37. <https://doi.org/10.20414/transformasi.v17i1.2702>
- Indrawan, I. W. A., Saputra, K. O., & Linawati. (2021). Augmented Reality sebagai Media Pendidikan Interaktif dalam Pandemi Covid-19. *Majalah Ilmiah Teknologi Elektro*, 20(1), 61–70. <https://doi.org/10.24843/MITE.2021.v20i01.P07>
- Indriyanto, B. (2012). Pengembangan Kurikulum sebagai Intervensi Kebijakan Peningkatan Mutu Pendidikan. *Jurnal Pendidikan Dan Kebudayaan*, 18(4), 440-453. <https://doi.org/10.24832/jpnk.v18i4.100>
- Iqbal, M. (2022). *WhatsApp Revenue and Usage Statistics (2022)*. <https://www.businessofapps.com/data/whatsapp-statistics/>
- Kartini. (2021). Analisis Pembelajaran Online Anak Usia Dini Masa Pandemi COVID -19 Kota dan Perdalaman. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(2), 809–818. <https://doi.org/10.31004/obsesi.v6i2.880>
- Ma'mun, N., & Maryam, S. (2021). Pelatihan kompetensi literasi digital bagi guru bahasa inggris berbasis e-learning moodle. *Rengganis Jurnal Penelitian Masyarakat*, 1(1), 69–79. <https://mathjournal.unram.ac.id/index.php/Rengganis/index>
- Memon, A. R., & Rathore, F. A. (2018). Moodle and Online Learning in Pakistani Medical Universities : An opportunity worth exploring in higher education and research. *Short Communication*, 68(7), 1076–1078.
- Morley, L., & Rassool, N. (2013). *School Effectiveness; Fracturing the Discourse*. Taylor & Prancis e-Library.
- Mustafa, D., Farida, U., & Yusriadi, Y. (2020). The effectiveness of public services through E-government in Makassar City. *International Journal of Scientific and Technology Research*, 9(1), 1176–1178. <https://doi.org/10.1080/01900692>
- Ngibad, K., Herawati, D., Ekawati, E. R., & Pradana, M. S. (2020). pelatihan E-learning berbasis Moodle untuk Dosen-Dosen Fakultas Ilmu Kesehatan Universitas Maarif Hasyim Latif Sidoarjo. *Darmabakti*, 01(january), 13–18.
- Nurkolis, N., & Muhdi, M. (2020). Keefektifan Kebijakan E-Learning berbasis Sosial Media pada PAUD di Masa Pandemi Covid-19. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(1), 212-228. <https://doi.org/10.31004/obsesi.v5i1.535>
- Nuryati, Nasikhah, D., Ulwiyah, W., Fatimah, R., & Suzana. (2021). Pendampingan Implementasi E Leraning Menyenangkan Bagi Guru PAUDKelurahan Argasunya Kota Cirebon ( PIAUD ). *Hadlonah: Jurnal Pendidikan Dan Pengasuhan Anak*, 2(2), 94–103. <http://journal.bungabangsacirebon.ac.id/index.php/hadlonah/article/view/452>
- Prasetyo, A. (2021). Analisis Software Development KIT & Metode Augmented Reality: Tinjauan Sistematis. *Science Tech*, 7(2). <https://jurnal.ustjogja.ac.id/index.php/sciencetech/article/view/10134>

- Rendi Setyowahyudi, T. F. (2020). Keterampilan Guru PAUD Kabupaten Ponorogo Dalam Membeirikan Penguatan Selama Masa Pandemi COVID-19. *Jurnal Golden Age*, 04(1), 100–111.
- Riadil, I. G., Nuraeni, M., & Prakoso, Y. M. (2020). Persepsi Guru Paud Terhadap Sistem Pembelajaran Daring Melalui Whatsapp di Masa Pandemi Covid-19. *PAUDIA*, 9(2), 89–110. <https://doi.org/10.26877/paudia.v9i1.6574>
- Rizal, M., Najib, M. I., & Mutiara, S. (2022). The Effect of Augmented Reality-Based Qur ' anic Natural Science into Student ' s Motivation and Learning Outcomes. *Journal of Distructive Learning Innovation*, 3(2), 190–191. <http://journal2.um.ac.id/index.php/jodli/article/view/29632/10553>
- Rohmawati, A. (2015). Efektivitas Pembelajaran. *Jurnal Pendidikan Usia Dini*, 9(1), 15–32. <https://doi.org/10.21009/JPUD.091>
- Sayekti, S. S., & Baridwan, Z. (2016). Pengaruh Pengetahuan dan Kepercayaan Terhadap Penggunaan Sistem Online. 1(1). <https://jimfeb.ub.ac.id/index.php/jimfeb/article/view/128/94>
- Setiawan, E. (2021). *Arti Kata Efektivitas*. <https://kbbi.web.id/efektivitas>
- Sholihatun, Utanto, Y., & Handayani, S. D. (2020). Analisa Pemanfaatan Teknologi Informasi dan Komunikasi Sebagai Media Pembelajaran Anak Usia Dini di Masa Pandemi Covid -19. *Seminar Nasional Pascasarjana 2020*.
- Singh, V. & T. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018). *American Journal of Distance Education*, 33(4), 289–306.
- Stratigos, T., & Fenech, M. (2021). Early childhood education and care in the app generation: Digital documentation, assessment for learning and parent communication. *Australasian Journal of Early Childhood*, 46(1), 19–31. <https://doi.org/10.1177/1836939120979062>
- Syafi'i, I., Sa'diyah, C., Wakhidah, E. W., & Umah, F. M. (2020). Penerapan Video Pembelajaran Daring Anak Usia Dini Pada Masa Pandemi COVID-19. *Al-Athfaal: Jurnal Ilmiah Pendidikan Anak Usia Dini*, 3(2), 140–160. <https://doi.org/10.24042/ajipaud.v3i2.7315>
- Taliawo, O., Goni, S. Y. V. I., & Zakarias, J. D. (2019). Hubungan Kerja Sama Antara Orang Tua Dan Guru Dalam Meningkatkan Minat Belajar Siswa di SMP Negeri Satu Atap 1 Desa Buo Kecamatan Loloda Kabupaten Halmahera Barat Maluku Utara. *HOLISTIK, Journal Of Social and Culture*, 12(4), 1–19. <https://ejournal.unsrat.ac.id/v3/index.php/holistik/article/view/25481>
- Watini, S. (2022). Problematika Pembelajaran Daring berbasis Teknologi Informasi pada PAUD di Masa Pandemi Covid-19. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 6(6), 5564–5574. <https://doi.org/10.31004/obsesi.v6i6.3161>
- Wijayanti, R. M., & Fauziah, P.Y., (2021). Perspektif dan Peran Orangtua dalam Program PJJ Masa Pandemi Covid-19 di PAUD. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 5(2), 1304–1312. <https://doi.org/10.31004/obsesi.v5i2.768>
- Wijoyo, H., & Indrawan, I. (2020). Model Pembelajaran Menyongsong New Normal pada Lembaga PAUD di RIAU. *Jurnal Sekolah*, 4(3), 205-212. <https://jurnal.unimed.ac.id/2012/index.php/js/article/view/18526>

