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The Influence of Gadgets on Child Growth and Development

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Abstract

The study aims at finding out the bad influences of playing gadgets for the students at kindergarten school. The subject of the study is the parents of students of TK Lakshmi 7 Surakarta who are 13 people (50% of parents and two teachers are involved due to health protocols). The approach or solution of the problem is giving counselling about the effect of using gadgets in the growth and development of early childhood to the parents. After conducting the counselling, it turns out that all participants understand the material given. However, after field observations were carried out as a follow-up to the provision of materials, it was found that there was one parent (6.7%) who still gave gadgets on their children as a game, so it can be concluded that there are 93.3% of students who really master the material and implement it (13 parents of students and 2 teachers).

Keywords

Gadget; Children; Growth and Development; TK Lakshmi 7; Kindergarten

1. Introduction

Early childhood is an organism which is a complete physical and spiritual unit with all its biological and physiological structures and devices so that it becomes a unique social figure. It is undeniable that now technology has developed more rapidly. Technology was created to facilitate human affairs. For example reading online information assists children to improve their reading levels as stated by (Azpiazu et al., 2017) that *YouUnderstood.Me*, an improved search environment, may promote learning by retrieving content that not only satisfies these users' information needs but also corresponds to their reading levels.

We can find countless kinds of technology in this modern era. One example of a very popular technology is *Gadgets* everyone uses gadgets with modern technology such as televisions, mobile phones, laptops, computer tables, smartphones, etc. This gadget can be found everywhere, both in adults and children. Children are now active consumers where many Electronic and Gadget products make children their target market. According to (Badri et al., 2017) Children claimed they use social media primarily to find information and stay in touch with family and friends. Most kids said that their parents knew about their social networking online activity.

Gadgets can be used by anyone and for anything depending on the needs of the gadget owner. The use of gadgets at this time has been used starting from early childhood to adults. (Kumar et al., 2018) state that Children between the ages of 8 and 12 spend roughly six hours each day interacting with digital content, yet they rarely receive formal training on how to manage their privacy online. It means that it needs instruction on how to manage the time in using gadget, select positive and avoid negative information, and has understood the consequence of interacting with social media and online information from internet. If those never been used, it creates impacts for children. As stated by (Wartberg et al., 2021) that Problematic social media use was linked to lower age, more difficult impulse control, more difficult goal-directed conduct, more procrastination, and more reported stress.

The use of gadgets in early childhood is usually used to play games from the total usage. Meanwhile, what is quite a lot among early childhood is the use of gadgets to watch animation or cartoon series for children. Meanwhile, very few use it to communicate with their parents or to view learning videos. (Sari & Mitsalia, 2016) reported that on average children use gadgets to play games rather than using them for other things. Only a few use to watch cartoons using gadgets. Another study conducted by (Delima et al., 2015) found that almost all parents (94%) stated that their children used to use technological devices to play games. Most children (63%) spend a maximum of 30 minutes for one game play. While 15% of respondents stated that children play games for 30 to 60 minutes and the rest can interact with a game for more than one hour. Based on these descriptions, it can be seen clearly that the form of using gadgets in early childhood is mostly for playing games rather than for other things, for that gadgets. On the other hand, the continuous use of gadgets to gadget addiction has a bad influence on the psychological development of early childhood. (John et al., 2018) state that Cyberbullying offenders, to a lesser extent, are more likely to engage in suicide conduct than those who do not participate in it, while cyber victims are more likely to engage in both self-harm and suicidal behavior.

The intensity of gadget use can be seen from how often children use gadgets in one day or if seen from every week based on how many days a week a child uses gadgets. The intensity of using gadgets that are too frequent in a day or week will definitely lead to the lives of children who tend to only care about their gadgets rather than playing outside the home. According to (Sari & Mitsalia, 2016), the use of gadgets is categorized as high-intensity if you use a gadget with a duration of more than 120 minutes/day and in one use it ranges from > 75 minutes. In addition, in a day can be used many times (more than 3 times) using gadgets with a duration of 30-75 minutes will cause addiction in using gadgets. Furthermore, the use of gadgets with moderate intensity if using gadgets with a duration of more than 40-60 minutes/day and the intensity of use in one use 2-3 times/day for each use. Then, good use of gadgets is in the low

category, namely with a duration of use < 30 minutes/day and a maximum usage intensity of 2 times.

2. Method

To achieve the expected results, it is necessary to be careful in determining the implementation method, because without the right method, the results of the service cannot be achieved or the goals will not be achieved. Therefore, this activity is carried out in the following stages:At this stage the service team prepares everything needed for service, namely preparing a place that will be used for service and taking care of place permits and determining the time of implementation and working with the principal to invite service targets. Based on an agreement with the school, namely TK Lakshmi 7, there are 13 parents (50%) who will be invited from the results of the election of the principal and there are 2 teachers of TK Lakshmi. So the number of service targets is 15 people because it will be carried out according to a strict health protocol (pandemic period). In addition, the implementation time is also determined, namely Saturday, March 13, 2021, at 10.00 WIB with outreach and discussion on the influence of the use of *gadgets* on the growth and development of early childhood.

Table 1. The Schedule of the Counselling

Date	Activity	Speakers
March 12 2021	Initial observation	Team
March 13, 2021	Counseling About the Effect of Use *Gadgets* in early childhood development	Dra. Lydia Ersta K, M.Pd And Drs. AR Koesdyantho, M.Pd, Kon
March 13, 2021	Discussion related to the material that has been delivered	Dra. Lydia Ersta K, M.Pd andDrs. AR Koesdyantho, M.Pd, Kons
March 14, 2021	Evaluation in the form of Observation	Dra. Lydia Ersta K, M.Pd And Drs. AR Koesdyantho, M.Pd, Kons Assisted by student (Rizky Rachmawati)
March 15, 2021	Evaluation in the form of Observation	Dra. Lydia Ersta K, M.Pd andDrs. AR Koesdyantho, M.Pd, Kons Assisted by student (Rizky Rachmawati)

The final Preparation phase At this stage an evaluation of the implementation is carried out to determine the success of the service. The evaluation was carried out by observing the homes of 13 students. Furthermore, after knowing the results then analyzed by percentage (%).

3. Result and Discussion

As can be seen in the schedule above, this community service begins on March 13, 2021 and ends on March 15, 2021. The length of service time is due to the implementation in the form of counseling (theory) and observations carried out per class. Counseling is carried out using the lecture method and discussion. It aims to be able to understand the material and be able to implement it. After the participants understand the material, it is hoped that initially the students will bring *gadgets* to school or often play *gadgets* both at school and at home parents can

supervise and prohibit activities followed by observation as a form of evaluation to determine the level of success.

In general, parents of students when discussing raises questions using the 5W formula (*Who, What, When, Where* and *which*) + 1H (*How*).It turned out that after the observations were carried out, there were no more students who brought them *gadgets* to school. So that parents who can attend 100% can understand the material presented and parents who usually tell their children to bring gadgets to school after counseling are no longer there.

Table 2. Participants of the Study (Parents of Kindergarten students)

No.	Group/Class	Total of the Students	The Number of Staff Present	Percentage
1.	Group/class A	10	5	50%
2.	Group/class B	16	8	50%

The criteria for parents who attend are fully determined by the school and the reason why only 50% is allowed is because it is still during the pandemic and must comply with health protocols. The results of observations carried out to measure success can be seen below: From the results of observations made by the service team, the following data were obtained: The answer to question no. 1 Is it seen from observations about the economic level of parents of students being seen as able to buy cellphones/ *gadgets*. In the 3rd table, it can be seen that the number of parents who are able to purchase cellphones is 13 people in the early observation and after the observation. Early observation means that before the parents got counselling and final observation is after they got the counselling.

Table 3. The Result of the 1st Question to Parents about the Economic Level of the Parents to Buy Cellphones

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	Parents can afford gadgets	Parents can afford gadgets
2	Samuel Andika Primary	Parents can afford gadgets	Parents can afford gadgets
3	Gumara Andika Pratama	Parents can afford gadgets	Parents can afford gadgets
4	Princess Raisya	Parents can afford gadgets	Parents can afford gadgets
5	Atla Hafid Rofa Robant	Parents can afford gadgets	Parents can afford gadgets
6	Rasia YunnaKhairusiasin	Parents can afford gadgets	Parents can afford gadgets
7	Nuchalas Putra Nur Cahya	Parents can afford gadgets	Parents can afford gadgets
8	Gillian GaulaVitre	Parents can afford gadgets	Parents can afford gadgets
9	Nofal Aeiz	Parents can afford gadgets	Parents can afford gadgets
10	Andro Meta Yunus Umar	Parents can afford gadgets	Parents can afford gadgets
11	The Milky Way Star Umar	Parents can afford gadgets	Parents can afford gadgets
12	Thwuphilus Khawila Agathon	Parents can afford gadgets	Parents can afford gadgets
13	Noella Estefanny Kurniawani	Parents can afford gadgets	Parents can afford gadgets

Table 4 shows the question about Do parents often give *gadgets* to their young children (1-6 years). The result was that in the early observation, there were six parents who never gave *gadgets* to their children. Those who answered sometimes to give *gadgets* to their children were 6 parents too. Then, there was a parent who gave *gadgets* to his children because he was crying if not. In the final observation, there were 12 parents who never gave *gadgets* to their children.

Table 4. The Result of the 2nd Question to Parents about Their Permission to Give Gadgets to Their Young Children

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	Sometimes	Never
2	Samuel Andika Primary	Never	Never
3	Gumara Andika Pratama	Sometimes	Never
4	Princess Raisya	Never	Never
5	Atla Hafid Rofa Robant	Sometimes	Never
6	Rasia YunnaKhairusiasin	Never	Never
7	Nuchalas Putra Nur Cahya	Never	Never
8	Gillian GaulaVitre	Given (if not given cry)	Yes (if not given cry)
9	Nofal Aeiz	Never	Never
10	Andro Meta Yunus Umar	Sometimes	Never
11	The Milky Way Star Umar	Never	Never
12	Thwuphilus Khawila Agathon	Sometimes	Never
13	Noella Estefanny Kurniawani	Sometimes	Never

Table 5 shows the 3rd question about do children often play using *gadgets* and do parents let it go *the gadget* used for games for their young children. Before the parents got the counselling, there were 6 parents who let their children play games in their gadgets. Those who never let their children play games in the gadgets were 6 too. Subsequently, there was a parent who let his gadget to be used to play games. After counselling, those who never let their gadgets to be played were 9 parents. Then, there were three parents who sometimes let their gadgets to be played. Finally, there was one parent who always let his children to play games in his gadgets.

Table 5. The 3rd question about do children often play using gadgets and do parents let it go the gadget used for games for their young children

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	Sometimes	Never, never
2	Samuel Andika Primary	Never	Sometimes you can/see the interest
3	Gumara Andika Pratama	Sometimes	Sometimes you can
4	Princess Raisya	Never	Never/never
5	Atla Hafid Rofa Robant	Sometimes	Never/never
6	Rasia YunnaKhairusiasin	Never	Never,/not willing
7	Nuchalas Putra Nur Cahya	Never	Never, never willing
8	Gillian GaulaVitre	Given (if not given cry)	Always because if you don't give it to cry, it doesn't matter
9	Nofal Aeiz	Never	Never/never
10	Andro Meta Yunus Umar	Sometimes	Never, never
11	The Milky Way Star Umar	Never	Never, never
12	Thwuphilus Khawila Agathon	Sometimes	Sometimes you can
13	Noella Estefanny Kurniawani	Sometimes	Never, never

Table 6th shows the answer to question no. 4 about "the extent to which parents understand the positive and negative impacts on children's growth". In the early observation, there were 13 parents who did not understand about the positive and negative impacts of using gadgets on children's growth. However, after getting counselling, those who understood the positive and

negative impacts of gadgets on children's growth were six students. Then, those who still did not understand the positive and negative impacts of gadgets on children's growth were seven people.

Table 6. The answer of the 4th question about the extent to which parents understand the positive and negative impacts of gadgets on children's growth

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	I don't understand	Understand
2	Samuel Andika Primary	I don't understand	I don't understand
3	Gumara Andika Pratama	I don't understand	I don't understand
4	Princess Raisya	I don't understand	Understand
5	Atla Hafid Rofa Robant	I don't understand	I don't understand
6	Rasia YunnaKhairusiasin	I don't understand	Understand
7	Nuchalas Putra Nur Cahya	I don't understand	I don't understand
8	Gillian GaulaVitre	I don't understand	I don't understand
9	Nofal Aeiz	I don't understand	Understand
10	Andro Meta Yunus Umar	I don't understand	Understand
11	The Milky Way Star Umar	I don't understand	Understand
12	Thwuphilus Khawila Agathon	I don't understand	I don't understand
13	Noella Estefanny Kurniawani	I don't understand	I don't understand

The table 7 shows the answer to question number 5 about "What are the actions of parents when they find out their children are playing *gadgets*". Before counselling, there were 12 parents who left their children when they were playing gadgets and there was one parent who warned his children when he found his children play gadgets. After counselling, there were five parents who warned their children when playing gadgets. Meanwhile, those who let their children to play gadgets were four parents. There was one parent who forbidden his children to play gadgets. Then, there was one parent who asked the gadgets being played by his children and gave another toy. Finally, those who requested the gadgets being played by their children were two parents.

Table 7. The answer of question about "what are the actions of parents when they find out their children are playing gadgets"

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	rebuked	rebuked
2	Samuel Andika Primary	Let children to use gadgets	Let children to use gadgets
3	Gumara Andika Pratama	Let children to use gadgets	Let children to use gadgets
4	Princess Raisya	Let children to use gadgets	rebuked
5	Atla Hafid Rofa Robant	Let children to use gadgets	rebuked
6	Rasia YunnaKhairusiasin	Let children to use gadgets	rebuked
7	Nuchalas Putra Nur Cahya	Let children to use gadgets	Let children to use gadgets
8	Gillian GaulaVitre	Let children to use gadgets	Let children to use gadgets
9	Nofal Aeiz	Let children to use gadgets	Forbidding
10	Andro Meta Yunus Umar	Let children to use gadgets	rebuked
11	Asked and given another toy	Let children to use gadgets	Asked and given another toy
12	Thwuphilus Khawila Agathon	Let children to use gadgets	Requested
13	Noella Estefanny Kurniawani	Let children to use gadgets	Requested

The table 8 shows the answer to question no. 6 "How Do Parents Try to Prohibit Their Children from Playing Gadgets". Before the parents got counselling, there were 11 of them who

prohibited their children to play gadgets. However, there was one parent who sometimes gave gadgets to his children to play. Also, there was one parent who gave gadgets so that his children did not cry. After they got counselling, they were 8 parents who asked the gadgets being played by their children and gave another toy. Those who prohibited their children to play gadgets were four parents. Finally, there was one parent who let his children to play gadgets so that he did not cry.

Table 8. The Answer to Question no. 6 "How do Parents Try to Prohibit Their Children from Playing Gadgets"

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	Sometimes given	Asked and given another toy
2	Samuel Andika Primary	Forbidden	Asked and given another toy
3	Gumara Andika Pratama	Forbidden	Prohibited
4	Princess Raisya	Forbidden	Asked and given another toy
5	Atla Hafid Rofa Robant	Forbidden	Asked and given another toy
6	Rasia YunnaKhairusiasin	Forbidden	Prohibited
7	Nuchalas Putra Nur Cahya	Forbidden	Asked and given another toy
8	Gillian GaulaVitre	Given so as not to be fussy	Just leave it as long as it doesn't cry
9	Nofal Aeiz	Forbidden	Prohibited
10	Andro Meta Yunus Umar	Forbidden	Prohibited
11	The Milky Way Star Umar	Forbidden	Asked and given another toy
12	Thwuphilus Khawila Agathon	Forbidden	Asked and given another toy
13	Noella Estefanny Kurniawani	Forbidden	Asked and given another toy

The last is table 9 that it was the answer to question number 7 "Do Parents still Give Their Children Gadgets. Before counselling, those who prohibited their children to use gadgets were 11 parents. Meanwhile, there was one parent who sometimes gave a gadget to his children. Subsequently, there was a parent who gave a gadget to his children so that he did not cry. After being given a counselling, those who never gave a gadget to their children were 12 parents. And there was a parent who still gave his children a gadget.

Table 9. The Answer to Question Number 7 "Do Parents still Give Their Children Gadgets"

No.	Student	Initial observation	Final observation/evaluation
1	Zhasran Hailah Alzam	Sometimes given	Never
2	Samuel Andika Primary	prohibited	Never
3	Gumara Andika Pratama	prohibited	Never
4	Princess Raisya	prohibited	Never
5	Atla Hafid Rofa Robant	prohibited	Never
6	Rasia YunnaKhairusiasin	prohibited	Never
7	Nuchalas Putra Nur Cahya	prohibited	Never
8	Gillian GaulaVitre	Given so as not to be fussy	Still given
9	Nofal Aeiz	prohibited	Never
10	Andro Meta Yunus Umar	prohibited	Never
11	The Milky Way Star Umar	prohibited	Never
12	Thwuphilus Khawila Agathon	prohibited	Never

13	Noella Estefanny Kurniawani	prohibited	Never

In this study, the parents of the school did not know and understand the positive and negative effect of gadgets on children's growth until the study ended. In fact that mobile phone gives negative effects. One of them is radiation for health. (Pattnaik et al., 2019) studied the effects of mobile radiation exposure on different brain waves are extensively studied. To investigate how radio frequency radiation affects five different brain waves, a sizable data set of 75 healthy people was investigated. Almost all of the brain waves at the various channels have undergone significant alterations. The modifications are seen on the right temporal side, toward the right ear where the phone is held. Another study by (Saidah et al., 2016) discovered that cell phone use is more harmful to human health than previously thought. According to doctors, all wireless devices, including cellular phones, laptops, wireless routers, wireless earphones, cell phone towers, Bluetooth devices, and tablet PCs, are to blame for the emergence of diseases like brain tumors, male infertility, and hearing impairment. (Hardell, 2018) stated that the bad effects of digital technology also affect health (neurological disorders, physiological addiction, cognition, sleep, and behavioral issues in addition to cancer) and social problems (changing on behaviour and wellbeing).

Although cell phones give negative effect, it also give positive effect. A study done by (Cibangu et al 2017) resulted that cell phones make communication and movement of people, commodities, and services easier. Another study done by (Davidovitch & Yavich, 2018) that students who had NetSpark installed on their smartphones and those who hadn't were compared in terms of how they used their free time. In terms of using mobile phones and their applications, the results did not distinguish between respondents who had NetSpark installed and those who did not. However, one finding that was validated was that cellular phone usage was higher when religiosity was low.

Another study to use mobile phone to increase student's cognitive ability was done by (Chen et al., 2010) stating that children's mobile phones should not only be a tool for communication, but also a tool for learning and for helping them to gather, compile, create, and express ideas as their cognitive abilities develop. The problems that the mobile phone design needs to address are participation, sharing, and feeling successful in order to improve children's social nature. (Cinel et al., 2007) conducted two experiments, we looked into how the frequency electromagnetic fields produced by a typical mobile phone might affect people's cognitive abilities after short-term exposure. Exposure to frequency electromagnetic fields had no appreciable impact on the participants' performance on any of the six tasks. This held true regardless of whether participants were exposed to Global System for Mobile Communication or CW signals or whether the phone was held to the left or right side of the head. These findings are in line with other recent studies showing that participants' cognitive performance is unaffected by REF exposure.

Finally, (Kiernan & Aizawa, 2004) studied (A) texting on a mobile device; (B) sending emails on a computer; and (C) speaking done by students. The students were divided into pairs, given two additional sets of tasks to complete—one in class and the other at home—and then trained with warm-up exercises. In the first narrative task, the target vocabulary was used. All communications made while completing the tasks were recorded for analysis. Pairs of speaking exercises were recorded, and transcriptions of samples were done for comparison. Finally, after

a post-test the following week, students were analysed your immediate learning progress. This project brought a number of potential benefits of mobile phones, while pointing out some drawbacks, were generally recommended. represent a tool for language learning deserving of further study.

4. Conclusion

The community service carried out at TK Lakshmi 7 Turisari Surakarta seems to be quite successful and has produced positive results among the parents of the kindergarten students. The involvement of 15 parents in counseling sessions demonstrated a high level of interest and participation. The success of community service is proven by the results of discussions held during counseling. A large number of parents, approximately 88%, demonstrated mastery of the material covered in counseling sessions. This shows that parents are actively involved with the content and are able to understand and apply the information provided.

Parents' enthusiasm for actively asking for counseling material further supports the notion that community service has a positive impact. The fact that only a few parents asked questions indicates a high level of understanding among the majority of parents. Assessment of training success is not only based on mastery of the material but also pays attention to feedback obtained through questionnaires and observations. The results of this assessment showed that 88% of participants considered this training successful. This positive feedback can be attributed to the effectiveness of counseling sessions in conveying valuable information and engaging parents.

However, it should be noted that 12% of participants were deemed not to have mastered the training material. The reason for this lack of success was due in part to their presence during training sessions. This shows that full participation and attendance are important factors in ensuring the success of community service initiatives. In conclusion, the community service carried out at TK Lakshmi 7 Turisari Surakarta can be said to be successful, as evidenced by the high percentage (88%) of parents who mastered the material and expressed satisfaction with the training. These positive results highlight the effectiveness of counseling sessions in conveying valuable knowledge to parents, contributing to an overall increase in community engagement and education in kindergarten.

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