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The Use of Technological Devices among Elementary Learners in Relation to Their Academic Engagement

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Abstract

The advancement of technology enables young learners to access and use devices that they can use for socialization and the accomplishment of school-related tasks. This study determined the use of technological devices among elementary learners in relation to their academic engagement. It was conducted in a private institution in Ozamiz City during the School Year 2023-2024. The descriptive-correlational design was used in the study. There were 120 Grades 1 to 6 learners and their teachers who served as the respondents selected through total enumeration. The Learners' Use of Technological Devices Questionnaire and the Learners' Academic Engagement Questionnaire were the researcher-made instruments used in gathering data. Mean, Standard Deviation and Pearson Product-Moment Correlation Coefficient were used as statistical tools to analyze the data gathered. Results revealed the great extent of use of technological devices by learner-respondents. They also had a very high level of academic engagement. The extent of use of technological devices was generally not influential to the level of the learners' academic engagement except on task completion. The use of technological devices has become a core part of the educational journey of young children. However, parents need to set limits on their children's use of these devices, which may affect how well the young learners accomplish academic-related tasks.

Keywords: Behavior, Devices, Engagement, Learners, Tasks.

1. Introduction

Technology is one of the most powerful influences in today's educational scene (Gopo, 2022). The development and modernity of the technology of communication and information created various changes in technology, starting from computers, which then changed into gadgets from laptops or notebooks, house phones, mobile phones, laptops, and iPads (Adriani & Asyifa, 2022). The devices can enhance the teaching-learning process in schools (Altun & Khurshid Ahmad, 2021), and using technology in schools provides students with an engaging learning experience (Haleem et al., 2022).

Digital applications in gadgets contribute significantly to the achievement of educational goals (Widodo et al., 2020). Guided by the desired learning outcomes, students may have learning motivation and find the use of gadgets powerful and significant (Sholekah et al., 2023). Students can use electronic devices to access resources, study for courses, record lectures, and examine their course textbooks, which has a positive impact on academic performance (Bayanova et al., 2019).

Technological devices with various applications can display various news media, social networks, hobbies, and even entertainment (Erlita et al., 2023). These devices with touch screens were especially popular for viewing videos, self-development, and gaming (Sivrikova et al., 2020). Incorporating projectors, computers, and other advanced digital resources makes learning exciting and enjoyable for students (Haleem et al., 2022).

In the Philippines, the education system is adapting to technology, with teachers adapting to technology and using learning materials as an extension of their classes (Rombaoa, 2019). Instead of traditional pen and paper, students use applications and tools for creating presentations and completing projects (Haleem et al., 2022). A study conducted in

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the Division of Tagum City claimed that despite some concerns about social media through technological devices, learners still find the devices useful in the classroom (Gopo, 2022).

Similarly, a study conducted in Davao del Norte, Philippines, claimed that because of the widespread availability of internet mobile connections, a significant number of students use technology. As a result, they have a high level of computer skills and use technology because it is useful and relevant to the educational process (Gopo, 2022). Consequently, parents hold positive beliefs about technology, with smartphones being the most used and most effective device among their children (Jabbar et al., 2019).

However, technological devices can have an impact, especially on elementary school children who use gadgets for a long time every day, resulting in a decrease in the quality of interest in learning (Nur & Rukmana, 2023). Children, as avid users of technology, face the challenge of the impact of technological devices on their brains and their socio-emotional and cognitive development (Gottschalk, 2019). Excessive use of gadgets by children has several negative effects, including addiction to screen time, behavioral changes, early maturation, and more, which many parents seem to be unaware of (Rahayu et al., 2023).

Negative impacts on academic performance manifest themselves in peeping answers and solutions to tasks on tests and independent work, sitting in social networks during classes, and distracting students from educational material (Bayanova et al., 2019). A study conducted in Negros Occidental, Philippines, disclosed a high degree of dependency on gadgets among students and a moderate level of procrastination (Garcia et al., 2022). In this vein, teachers or parents are expected to be able to minimize students' gadget use (Chadijah et al., 2023). Parents need to limit the use of gadgets among their children and provide a set schedule when the can latter play with technological devices (Heriana et al., 2023). The current research identified a knowledge gap in previous studies concerning the use of technological devices among elementary learners and its effects on academic engagement.

In one of the private institutions in Ozamiz City, the researcher observed the prevalence of the use of technological devices among learners in the Basic Education Department. Children in different grade levels use these devices either inside or outside the classroom, thus becoming part of their existence as young individuals. In this light, the study sought to investigate the impact of the use of technological devices on young learners' academic engagement, given the significant amount of time the children could spend using these digital tools.

2. Research Methods

2.1. Research Design

The descriptive-correlational design was used in the study. The design is used to explain phenomena, opinions, behaviors, and other defined variables through numerical data collection and statistical analysis (Kapici & Akçay, 2016). The design was considered appropriate in determining the relationship of the use of technological devices to learners' academic engagement.

2.2. Research Setting

The study was conducted in the Grade School Department in one of the private institutions in Ozamiz City, Misamis Occidental, Philippines. The Department is headed by a school principal and an assistant principal, with 6 classroom advisers and 3 subject teachers.

2.3. Respondents of the Study

The respondents of the study were 120 Grades 1 to 6 learners and their respective class advisers. They were selected through total enumeration. The selection criteria for the learner-respondents included the following: 1) Grades 1 to 6 learners enrolled in School Year 2023-2024; 2) have used technological devices (cell phone, I-Pad, desktop computers, laptop/ notebook computer, tablet); 3) gave assent or verbal consent to participate in the study; and 4) able to obtain the parents' consent to serve as respondents of the study. On the part of the teacher-respondents, they signified consent to participate in the study through their assessment of the young learners' academic engagement.

2.4. Research Instruments

A. Learners' Use Technological Devices Questionnaire. The researcher-made instrument had three constructs: communication, instruction, and recreation, with five statements each. The 4-point Likert scale was used. Validation process was observed using experts in the field. A pilot test was conducted using learners who were not included as actual respondents of the study. The instrument yielded the following Cronbach's Alpha results: communication = 0.7290), instruction = 0.8000, and recreation = 0.7363. Thus, the instrument was considered reliable for use by the respondents. In assessing the extent of the learners' use of technological devices, the following scale was used:

Responses	Continuum	Interpretation
4 – Always (A)	3.25 – 4.00	Very Great Extent (VGE)
3 – Often (O)	2.50 – 3.24	Great Extent (GE)
2 – Sometimes (S)	1.75 – 2.49	Low Extent (LE)
1 – Never (N)	1.00 – 1.74	Least Extent (LtE)

D. Learners' Academic Engagement Questionnaire. The researcher-made instrument had four constructs: task completion, quality of work, and class participation. The questionnaire contained ten indicators per construct and employed the 4-point Likert scale. The instrument underwent the validation process using experts in the field. A pilot test was conducted using learners who were not included as actual respondents of the study. The instrument yielded the following Cronbach's Alpha results: task completion = 0.9115, quality of work = 0.8617, and class participation = 0.7615. Thus, the instrument was considered reliable for use by the actual respondents of the study. In assessing the level of the learners' academic engagement, the following scale was used:

Responses	Continuum	Interpretation
4 – Always (A)	3.25 – 4.00	Very High (VH)
3 – Often (O)	2.50 – 3.24	High (H)
2 – Sometimes (S)	1.75 – 2.49	Low (L)
1 – Never (N)	1.00 – 1.74	Very Low (VL)

2.5. Data Collection

Before gathering the data, the researcher sought approval from the Vice President for Academic Affairs of the institution where the study was conducted. After approval was obtained, the researcher asked permission from the School Principal of the Basic Education Department. After obtaining the necessary approvals, the researcher prepared the necessary consent forms to seek parental consent and the voluntary participation of the respondents. The researcher personally administered the survey questionnaires to the respondents, and the answered instruments were retrieved immediately. The data gathered were tallied for statistical analysis, and interpretation of the findings followed.

2.6. Ethical Considerations

The paper was submitted to the institution's Research Ethics Board before the data was gathered. The researcher asked the respondents for voluntary participation as a salient ethical aspect of the study's conduct. The participants were informed that they would not be harmed in any way and that respect was prioritized for the dignity of the respondents. The anonymity of research respondents and confidentiality of the responses were guaranteed. Moreover, deception and exaggeration about the aims and objectives of the research were avoided. Affiliations in any form, sources of funding, and any possible conflicts of interest were declared. Finally, any communication about the research was done with honesty and transparency.

The researcher asked the respondents to sign the Assent Form (for learners) and Informed Consent Form (for teachers) as proof of their voluntary participation, with the assurance that only the researcher has access to the research data. Parental consent was also sought since the learner respondents were minors. They were also informed that they could withdraw from the study at any point.

2.7. Data Analysis

The study used the following statistical tools in analyzing the data gathered:

Mean and *Standard Deviation* were used to determine the extent of the learners' use of technological devices and the level of the learners' academic engagement.

Pearson Product-Moment Correlation Coefficient was used in exploring the significant relationship of the learners' use of technological devices to academic engagement.

3. Results and Discussion

3.1. Extent of the Learners' Use of Technological Devices

Table 1 presents the extent of the learners' use of technological devices. It is shown that the overall extent of use of technological devices by elementary learners was to a great extent (M=2.83; SD = .73). This finding implies that the learners were engaged in the use of devices like cellphones, tablets, or desktop computers. It further implies that they had access to or even ownership of these devices and that they had significant time to use or explore them.

Many young children, including those enrolled in Grades 1 to 6, use technological devices. They have various sources through which they can connect digitally with their peers, classmates, neighbors, family members, and even teachers. With the many features that these devices offer, they can connect with anybody, especially with the availability of the Internet, which allows one to communicate online.

Table 1. Extent of the Learners' Use of Technological Devices (n=120)

Constructs	M	SD	Remarks
Communication	2.69	.74	Great Extent
Information	2.64	.74	Great Extent
Recreation	3.16	.71	Great Extent
Overall Extent of Use	2.83	.73	Great Extent

Scale: 3.25-4.0(Very Great Extent); 2.50-3.24(Great Extent); 1.75-2.49 (Less Extent); 1.0-1.74 (Least Extent)

The Table further shows that the respondents rated the use of technological devices for communication to a great extent (M=2.69; SD = .74). This finding implies that elementary learners spent adequate time communicating with people they needed to connect with, like their family members and friends to whom they could send messages for personal or school-related matters.

Young children may also use technological devices to connect with their peers, classmates, friends, and even teachers. Facebook and chatting messages through messengers make communication easy for them. There is no need for physical presence when exchanging messages; they can talk and chat online.

It is further shown that the learner-respondents used technological devices for information to a great extent (M=2.64; SD = .74). This finding implies that the respondents utilized online resources to get ideas or information, either for personal use or academic requirements. Amid their varied grade levels, their use of gadgets like cell phones was a valuable means of accessing information. The learners were not confined only to print materials but also to online resources.

It is also shown that the respondents used technological devices for recreation purposes to a great extent (M = 3.16; SD = .71). This finding implies that the young learners made use of the devices to entertain themselves, maybe by seeing Facebook posts or engaging in online games. They could be spending substantial time with their peers or/and their classmates doing pair or group mobile games. The use of technological devices could be a more personalized means of having something to play with, with the special feature of interacting online with other people.

Technological progress has influenced the way people acquire knowledge and learn. The importance of online technology is especially emphasized in new methods for learning and education (Szymkowiak et al., 2021). Thus, multiple technologies can have great potential to enrich children's learning (Yang, 2022). The integration, diversity, and interaction that multimedia technologies can offer enable people to communicate information or ideas with digital and print elements (Abdulrahman et al., 2020).

The use of technological devices has become part of young children's lives, whether inside or outside school. They can use the devices for various reasons. However, what is highlighted is that they have considerable access to these digital means of communicating, getting information, and even entertaining themselves, according to what technological advancements may offer them. Despite their young age, they are already exposed to various online platforms, especially the convenience that gadgets and cell phones offer.

3.2. Level of the Learners' Academic Engagement

Table 2 shows the level of academic engagement of the learners. It is shown that the learners' academic engagement was generally very high (M=3.34; SD = .65). This finding implies that the young learners were highly engaged in their academic undertakings. They exerted their best efforts to do what needed to be done and comply with the various tasks they needed to do in school according to the standards or requirements prescribed by DepEd. It means further that the respondents ensured that they gave attention to the various tasks assigned to them by their teachers. The young learners maximized participation as part of the learning process for cognitive, emotional, and psychomotor development.

It is shown in the Table that the learners' academic engagement in terms of task completion was high (M= 3.21; SD = .69). This finding implies that the learners worked on the assignments or tasks assigned to them. However, the high level of engagement could be improved further to reach the highest level of engagement. There could be more that the learners could exert to improve certain areas that needed more time and attention so that task completion could be enhanced. The learners needed to ensure that they met the deadline given by their teachers for accomplishing tasks. It could be inferred from the study that there could be instances when they might not have finished what was assigned to them.

Elementary learners have specific tasks to accomplish according to their grade levels. Their teachers assign them things to do to assess their knowledge and skills. There are competencies that need to be followed and accomplished, and the learners must do and accomplish specific activities to assess their understanding of the concepts. It is important for the learners to be able to complete the tasks assigned to them because those could have a significant impact on their academic standing.

Table 2. Level of the Learners' Academic Engagement (n=120)

Constructs	M	SD	Remarks
Task Completion	3.21	.69	High
Quality of Work	3.25	.70	Very High
Class Participation	3.55	.56	Very High
Overall Engagement	3.34	.65	Very High

Scale: 3.25-4.0(Very High); 2.50-3.24(High); 1.75-2.49 (Low); 1.0-1.74 (Very Low)

The Table further shows that the learners' academic engagement in terms of quality of work was very high (M = 3.25; SD = .70). This finding implies that the learners ensured that the outputs they gave to their teachers were the product of their best efforts. They tried to adhere to the requirements and even rubrics in accomplishing the various outputs they were expected to comply with or submit. The learners had to ensure that they followed the process and gave extra attention to the details of how and what to accomplish for their subjects.

Table 2 also shows the very high level of the learners' academic engagement as to class participation (M=3.55; SD = .56). This finding implies that the learners participated in the class activities at a very evident level. It further means that they engaged in individual activities that could measure how well they do things by themselves. Aside from individual engagement, they also participated in pair and group activities that could also hone their interpersonal skills. There could be activities they needed to engage in as individual learners, while other activities required the presence of their fellow learners for pair or group activities.

Academic engagement is higher in classrooms where learners establish interpersonal skills, learners' autonomy is considered, consistent and clear feedback is given to learners, teachers hold high expectations and meaningful, interesting, and challenging tasks are given to learners. Academic engagements have an indirect influence on students' achievement (Abid & Akhtar, 2020). A study conducted in Laos disclosed that most of the students consider the kindness and friendliness of teachers to be important for their engagement. Moreover, the students in the sample also indicate that they are more engaged in learning if teachers provide opportunities to have discussions with peers (Sengsouliya et al., 2020).

On the other hand, a 2019 survey disclosed that the respondents averaged 19.4% of class time using a digital device for non-class purposes. The average respondent used a digital device 9.06 times during a typical school day for non-class purposes (McCoy, 2020). The detrimental effects of student smartphone and social media use on academic distraction are more conspicuous, especially with the pervasiveness of personal digital devices (Dontre, 2021). A study suggested that the academic use of mobile technology influences students' higher-order thinking skills directly, in addition to their learning effort and active engagement in courses (Kim et al., 2020).

Class participation is as simple as answering the teachers' questions during lesson discussions or doing the seat work given. The elementary learners just needed to take part proactively in the learning process by being active in the class in various ways so that their cognitive, psychological, and even emotional skills could be developed as they progressed in their education levels. Thus, the respondents had to be given various activities by their teachers that would make them individual learners and members of a learning community.

3.3. Relationship between the Extent of Learners' Use of Technological Devices and the Level of Academic Engagement

Table 3 shows that, generally, the respondents' extent of use of technological devices had no significant relationship with the level of the learners' academic engagement. Most of the p-values were above .05; thus, the Null Hypothesis was rejected. However, for the construct of task completion, the Null Hypothesis was rejected because of the p-value of .02, indicating the highly significant relationship between the learners' recreational use of technological devices and their task completion related to their academic engagement.

As shown in the Table, the use of technological devices for communication had no relationship with the classroom behavior of the respondents in terms of task completion, quality of work, and class participation. This finding indicates that regardless of the extent to which young learners could be using their cellphones or gadgets, computers included, they could still be engaged academically. Regardless of the tasks completed by the learners and the quality of their outputs, the use of technological devices had no bearing on it.

Table 3. Relationship between the Extent of the Learners' Use of Technological Devices and the Level of Academic Engagement

Variables	*r* value	*p* value	Decision
Communication and			
Task Completion	.07	.40	Accept Ho.
Quality of Work	.12	.19	Accept Ho.
Class Participation	.03	.78	Accept Ho.
Information and			
Task Completion	.02	.82	Accept Ho.
Quality of Work	.06	.49	Accept Ho.
Class Participation	.06	.48	Accept Ho.
Recreation and			
Task Completion	.21**	.02	Reject Ho.
Quality of Work	.09	.49	Accept Ho.
Class Participation	.06	.48	Accept Ho.

Ho_1: There is no significant relationship between the extent of the learners' use of technological devices and the level of academic engagement.

*Note: Probability Value Scale: **p<0.01 (Highly Significant); *p<0.05 (Significant); p>0.05 (Not significant)*

It is further shown that the respondents' use of technological devices for information purposes also had no influence on the learners' academic engagement across all constructs, as evidenced by the p-values higher than .05. Thus, the two variables had no relationship with each other. Completion of tasks and the quality of output could be linked to how often the learners could be using technological devices. The respondents' participation in class could not be influenced as well by these devices, especially because the teachers clearly prohibited the learners from using cell phones or tablets while inside the classroom. This finding means that technological devices did not affect how academically engaged the learners could be. The Grades 1 to 6 learners could have various activities and requirements, yet they could accomplish them regardless of their use of technological devices for gathering information from people or online platforms.

In terms of the use of technological devices for recreation purposes, the extent of use had a significant relationship to the learners' academic engagement in terms of task completion, with a p-value of .02. Thus, the Null Hypothesis was rejected. How engaged the learners could be in their use of technological devices like cell phones and tablets for recreational activities like exploring social media or playing online games was influential in how the learners completed the tasks assigned to them. The other two constructs of learners' academic engagement were not influenced by their use of technological devices.

According to the Self-Determination Theory by Deci and Ryan (1985), intrinsic motivation, which involves engaging in an activity for its inherent enjoyment or satisfaction, is crucial for fostering sustained engagement and optimal learning outcomes. When it comes to technological device use, the absence of a significant relationship between usage extent and academic engagement could be explained by the type of motivation underlying device use. If children are primarily motivated by external factors such as rewards or pressure rather than intrinsic interest or enjoyment, their academic engagement may not be significantly impacted by the extent of device use.

The academic use of mobile technology engages students beyond traditional classroom contexts. Over the past few years, higher education institutions have promoted students' learning and growth by supporting their use of mobile technology. Mobile technology offers educational possibilities that can enhance students' growth in higher education (Kim et al., 2020). However, although technology can benefit student learning, it can also be detrimental to the educational process. Technology enhances many learning opportunities and allows for student comfort, but it can also be a tool that is too heavily relied on and can potentially affect students' fine motor development and problem-solving skills (Carstens et al., 2021). A study conducted in Saudi Arabia found that the greater the use of e-learning materials and tools within an educational context, the higher the performance of the students and the efficiency of teaching practices (Alenezi, 2020).

This study disclosed that when learners use technological devices like cell phones and tablets for recreational purposes, they may be allocating significant time that is supposedly spent for accomplishing academic-related tasks. Hence, elementary learners may incur late submission of performance tasks or assignments due to the time spent on online games or surfing Facebook. However, the respondents of the study could still be young; they were well-versed in the use of technology, especially in entertaining themselves outside class time. Thus, parents may set limits to the young learners' use of these devices so that adequate time may be given to academic-related matters.

4. Conclusion

Though the use of technological devices is prevalent among elementary learners, they have exerted their best effort in engaging and accomplishing academic-related activities or tasks. However, their use of technological devices for recreational purposes may have an adverse effect on academic engagement, specifically on task completion. In this regard, parents need to regulate the use of technological devices among learners so that the latter may allocate their time wisely to ensure the timely accomplishment of academic tasks.

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