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THE EFFECT OF DIGITAL TIME ON READING THE ANALOG WATCH AMONG THE SENIOR HIGH SCHOOL STUDENTS IN BAMBANG NATIONAL HIGH SCHOOL (BNHS)

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ABSTRACT
With so many changes brought by the advanced technology, many things have been affected unconsciously. Everything is becoming digitalized from buying things online, food service, as well as the use of clocks. Time is crucial, it tells the date and day of the month. It helps scientists to conduct a comprehensive study, weather forecasters to forecast disaster or weather and many more things. However, with that changed brought by technology, analog clock is starting to get behind. Most people including students and workers are now using digital time. Which they find to be more convenient and easier to use. With this at hand, they become unable to analog clock. This study was conducted to assess the current situation of senior high school students at Bambang National High School. To ascertain the level of their analog clock reading skills. The result would help the study to provide intervention program for an action research which will ofcourse help all responsible sectors particularly DepEd to take action on this matter starting at the grass root level. The study employed a quantitative descriptive research design to a 45 purposively selected senior students at Bambnag High National School. The findings of this study reflects that the respondents have a high perception on the benefits of digital time and analog clock, but do not reflect it on their formative assessment. Because, among all three attributes, it was the standard time-related vocabulary that has a frustration level except on the seconds, minutes, and hour reading skills. The study therefore recommends to raise the level of awareness to all responsible stakeholders about it through Facebook campaign and producing educational pamphlet consisting the importance of analog clocks and the effect of digital time on it and on the analog reading skills of the learners and everyone.

KEYWORDS: - *Digital Time, Analog Clock, Analog Clock Reading Skills*

I. INTRODUCTION

Time is the first vocabulary word when people hear the word clock. Also, it instills the terms “numbers” and “day” on a military basis. The clock can be worn, hung on the wall, or placed on the table. It helps people tell the time of day, in the morning, afternoon, evening, or at night. Without time, miscommunication may occur, tardiness is possible, and consecutive errors may happen. For instance, in the medical sector, one of the most delicate parts of a patient's needs is taking medicines according to the doctor’s prescribed time. When the doctor instructs a patient to take the medicine every eight hours, it should be strictly followed. If not, the bacteria will be resistant or immune to the medicine, especially with antibiotics. Also, it may need a higher dosage, which may destroy some of the internal organs.

Aside from the medical perspective, time is crucial in the business sector. For instance, when the CEO sets a meeting but fails to meet by the proposing company, termination of the contract may happen. In the employment area, employees may be fired when the time of work is not adhered to diligently. On the part of students in higher and lower years, they may get a failing grade if they do not submit their outputs on time. So, time is not just a morsel but a chunk of importance in humans’ day-to-day activities.

In the early days, people could tell the time by merely looking at the direction of their shadow. Until they discovered and invented the first water clock it was invented and used in Babylonia, Greece, Rome, the Moors, and the Arabs. Later, in the 900 AD, the candle clock was developed. Then the wheel clock in 1335, and the hourglass in the 14th century. Then, the first analog clock was developed in 1656 by Christiaan Huygens. The first analog clock was a pendulum, then the pocket watch. Finally, the wristwatch was invented in 1775 by Abraham-Louis Breguet. (Lambert, 2024; Baker, 2025).

The use of an analog watch is encouraged at home and schools, so it is like everywhere. People back then preferred using analog clocks. However, with the changes brought by technology, the analog clock is slowly being replaced by the digital watch that was introduced in 1970. Until it became more prevalent in today's time, it is now incorporated on laptops and phones. (Clock Store,2020).

There is nothing wrong with using a digital time, the only concern is that today’s younger generation cannot read analog clocks or watches. Because they rely on their digital time. When asked to read the analog ones, they need more time to understand it. This is similarly true to Stump's (2019) discussion in his article. He

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underscored that kids, teenagers, and college students cannot read analog clocks or watches anymore.

In the Philippines, particularly in Bambang, Nueva Vizcaya, the researcher of this study has observed a similar case among college and senior high school students. The detected problem among the students was found accidentally when a teacher asked this college student to tell the time by reading the analog clock and waiting for a response. After a few minutes passed, the student shamefully admitted that he could not read it. To conclude whether or not the situation where the teacher and the researcher of this study just by chance met a student in a rare case cannot be read. Another college student was asked to read the analog clock and tell the teacher the exact time at the moment and point "Alas Onse". To the researcher's surprise, the same result was shown.

The problem has motivated the researcher of this study to furtherly prove the formulated assumption that today's young generation cannot read an analog clock or watch. And to find out the culprit, if it was the reliance on digital time. The conduct of this study will be aligned to the following Basic Education Research Agenda of DepEd Order Number 39, Series 2016: (1) Build on gains from existing research; (2) Generate new knowledge on less explored but priority fields of basic education; (3) Systematically focus DepEd's attention on relevant education issues; and (4) Maximize available resources for research within and outside the Department.

The rationale of this study is the following: 1.) to raise awareness of the current situation of the learners in reading analog clocks or watches (serves as an intervention). 2.) to help young generations of learners understand the significance of analog clocks or watches in their daily lives. (spatial, conversion, etc). 3.) to promote the importance of choosing an analog clock or watch over a digital one. 4.) to inculcate in the minds of everyone the negative effects of too much reliance on digital time.

Hence, the study determined the present analog reading skills of Senior High School Students at Bambang National High School. The findings were the basis of possible interventions applicable to senior high school, college, and university students manifesting similar problems.

II. METHODOLOGY

A quantitative–descriptive research design was employed in the study. The researcher used a purposive sampling. There were forty-five (45) senior high school students from the TVL and Academic tracks. The content of the survey was student-made, anchored from the literature of Napier (2023), Bellis (2024), and CloudNola (2024).

The 5-point Likert scale was incorporated in the instrument. It allowed the respondents to rate their perception as follows:

Scale	Rate	Qualitative Description	Perception Level
5	4.50-5.00	Strongly Agree	Very High
4	3.50-4.49	Agree	High
3	2.50-3.49	Unsure	Moderate
2	1.50-2.49	Disagree	Low
1	1.00-1.49	Strongly Disagree	Very Low

Analog reading skills were computed using:

$$\text{ARS} \quad \frac{\text{Total correct answer}}{\text{Total number of items}} \quad \text{X100}$$

The Test Criteria for Literal Comprehension (Adapted from Phil-IRI)

Level	Comprehension
Independent	80-100 %
Instruction	59-79 %
Frustration	58 % - below

III. RESULTS AND DISCUSSION

This chapter contains the results of the data collected from the Senior High School Students of Bambang National High School, Nueva Vizcaya. The data answering the statement of the problems of this study are presented in the tables below.

Problem 1. What are the perceived benefits of digital time among the senior high school students in terms of accuracy, versatility, and durability?

To arrive at the answer to this problem, the mean and standard deviation of each indicator were computed. Results are exhibited in Table 1.

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Table 1
Perceived benefits of digital time among the Senior High School students in terms of accuracy, versatility, and durability

Elements /Indicators		Mean	S.D	Qualitative Description
A. Accuracy				
1.	Keep time more accurately	4	0.9	Agree
2.	Precision in timekeeping is essential for various activities such as scheduling appointments, cooking, and timing workout routines	4	0.7	Agree
3.	The power source is more accurate.	3.7	0.7	Agree
4.	Displays time in precise units	3.6	0.8	Agree
5.	Offers alarms with precise timing	4	0.9	Agree
Total Mean		4		
B. Durability				
1.	It is generally sturdy and durable.	3.6	0.8	Agree
2.	Less prone to mechanical error.	3.5	0.7	Agree
3.	It can withstand accidental drops or impacts	3.4	0.8	Agree
4.	It is not susceptible to wear and tear caused by mechanical parts rubbing against each other	3.4	0.8	Unsure
5.	It is water resistant	3.4	1	Unsure
Total Mean		3		
C. Versatility				
1.	It is used in various settings, including homes, offices, hospitals, schools, and industries	4.1	0.9	Unsure
2.	It can display time in different formats, such as 12-hour or 24-hour, making it suitable for use in different parts of the world.	4	0.8	Agree
3.	It can be integrated into various devices such as smartphones, computers, appliances, and many more.	4	0.8	Agree
4.	It has customizable display options.	3.9	0.9	Agree
5.	It can be used as a timer for various activities.	3.9	0.9	Agree
Total Mean		4		
Overall Mean		**3.8**	**0.8**	**High**

It can be inferred from the table above that the perceived benefits of analog clocks among senior high schools in terms of accuracy, versatility, and durability are high. The result is supported by a total mean of four ($\bar{x}$ = 3.8) and a standard deviation of one (σ = 0.8). The standard deviation implies that the answers of the respondents varied by 0.8 points.

The highest attribute of digital time is accuracy ($\bar{x}$ = 4). When rounded, the indicators of this attribute are all four ($\bar{x}$ = 4). The respondents' total mean for this attribute is four (4). They perceived that digital time keeps time more accurately ($\bar{x}$ = 4); its precision in timekeeping is essential for various activities such as scheduling appointments, cooking, and timing workout routines ($\bar{x}$ = 4). The power source is more accurate ($\bar{x}$ = 4). Displays time in precise units ($\bar{x}$ = 4). Offers alarms with precise timing ($\bar{x}$ = 4).

The middle is the versatility. Though it has a total mean of four ($\bar{x}$ =4), its indicators range from 3.9 to 4.1 as follows: It is used in various settings, including homes, offices, hospitals, schools, and industries ($\bar{x}$ = 4.1); It can display time in different formats, such as 12-hour or 24-hour, making it suitable for use in different parts of the world ($\bar{x}$ = 4); It can be integrated into various devices such as smartphones, computers, appliances, and many more ($\bar{x}$ =4); It has customizable display options ($\bar{x}$ =3.9); It can be used as a timer for various activities ($\bar{x}$ = 3.9).

The lowest attribute is durability ($\bar{x}$ = 3). The respondents' perception of these attributes is a mixture of 3 and 4 scales. The first three attributes got three point six and three point five ($\bar{x}$ = 3.6; $\bar{x}$ = 3.5), while the remaining two indicators got three point four ($\bar{x}$ = 3.4). They believe that though digital time is generally sturdy and durable, less prone to mechanical error, and can withstand accidental drops or impacts. Some of them have experienced wear and tear caused by mechanical parts rubbing against each other. It is also possible that some of them have experience dropping it in the water, which destroyed it immediately.
The result implies that the respondents perceive the digital time to be more accurate than versatility and durability. It also suggests that the respondents are more particular about accuracy.

As Napier had stated, digital time shows time in a clear and easily readable format. Similarly to Bellis (2024), Aryal (2019), and Napier(2023), people of all ages choose digital time because it

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does not require understanding and reading the hand positions, it is accurate, durable, and versatile. Borrowing the definition of Napier (2023), durability refers to the ability of clocks to last longer. And with digital time incorporated in cellphones, laptops, notebooks, etc can be said to be durable.

The finding suggests that the respondents found digital time durable because it is incorporated in their gadgets, and some of their wristwatches or digital watches.

Problem 2. ***What are the perceived benefits of analog clocks are among the senior high school students in terms of accuracy, versatility, and durability?***

Similar to SOP 1, this problem was answered by computing the mean of each indicator. And the result is presented in Table 2.

Table 2

Perceived benefits of analog clocks among the Senior High School students in terms of accuracy, versatility, and durability

Elements /Indicators		Mean	S.D	Qualitative Description
A. Accuracy				
1.	Keep time more accurately	3.9	0.9	Agree
2.	Precision in timekeeping is essential for various activities such as scheduling appointments, cooking, and timing workout routines	3.9	0.9	Agree
3.	Power source is more accurate.	3.6	0.9	Agree
4.	Displays time in precise units	3.7	0.9	Agree
5.	Offers alarms with precise timing	3.8	1.0	Agree
Total Mean		4		
B. Durability				
1.	It is generally sturdy and durable.	3.6	0.9	Agree
2.	Less prone to mechanical error.	3.5	0.8	Agree
3.	It can withstand accidental drops or impacts	3.3	1.0	Agree
4.	It is not susceptible to wear and tear caused by mechanical parts rubbing against each other	3.2	0.8	Moderate
5.	It is water resistant	3.5	1.0	Agree
Total Mean		3		
C. Versatility				
1.	It is used in various settings, including homes, offices, hospitals, schools, and industries	4	1.0	High
2.	It can display time in different formats, such as 12-hour or 24-hour, making it suitable for use in different parts of the world.	3.8	1.0	Agree
3.	It can be integrated into various devices such as smartphones, computers, appliances, and many more.	3.7	1.1	Agree
4.	It has customizable display options.	3.7	0.9	Agree
5.	It can be used as a timer for various activities.	3.8	1.1	Agree
Total Mean		4		
Overall Mean		**3.7**	**0.9**	**High**

Based on Table 2, the level of perception of the respondents on the benefits of the analog clock is high. It is supported by an overall mean of three point seven ($\bar{x}$ = 3. 7) and an overall standard deviation of .09, showing not too far differences in the ratings they give per indicator.

As for the attributes, the highest is the versatility with a total mean of four ($\bar{x}$ = 4). Among its indicators, number 1 has the highest calculated mean of four ($\bar{x}$ = 4). The respondents agreed that an analog clock is used in various settings, including homes, offices, hospitals, schools, and industries.

The second highest is the accuracy. Though it has a total mean of four (4), its indicators' mean ranges from 3.6 to 3.9.

The attribute with the lowest total mean is durability, with a total mean of three ($\bar{x}$ = 3). The respondents agreed that an analog clock can keep time more accurately ($\bar{x}$ = 3.9). Precision in timekeeping is essential for various activities such as scheduling appointments, cooking, and timing workout routines ($\bar{x}$ = 3.9). Power source is more accurate ($\bar{x}$ =3.6). Displays time in precise units ($\bar{x}$ =3.7). Offers alarms with precise timing ($\bar{x}$ = 3.8).

The result implies that the respondents have a high perception of the versatility of the analog clock. Meaning, the respondents appreciated that an analog clock can be used anywhere and anytime (Napier, 2023). This proves that the respondents may have used an analog clock in the classroom for discussion

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purposes, which proves the excerpt of Dedham Country Day (2022), that analog clocks are important on many occasions and instances, like teaching basic math concepts, understanding historical timekeeping, and developing essential life skills.

The findings suggest that respondents sometimes use an analog clock at school for academic purposes.It is therefore necessary to keep in mind to preserve the analog clock for general purposes.

Problem 3. ***What is the level of analog reading skills of the Senior high school students at Bambang National High School in terms of seconds, minutes, hours, and standard time-related vocabulary?***

To get the level of analog reading skills of the respondents, frequency and percentage count were used, as well as the average. The result is exhibited in Tables 3,4,5, and 6.

Table 3
Level of Analog Reading Skills of the Respondents in Terms of Seconds

Level	Grading Scale	Frequency	Percentage
Independent	80-100 %	43	96
Instructional	59-79%	2	4
Frustration	1-58%	0	0
	Total	45	100
Mean Rating			99
Standard Deviation			7
Qualitative Description			Independent

Gleaned from the table above, the level of analog reading skills of the respondents in terms of seconds is independent. The result is supported by a mean rating of ninety-nine and a standard deviation of seven ($\sigma = 7$).

The result implies that the respondents are good at reading seconds; they can determine 10 seconds, 40 seconds, and so on; they can also convert seconds into minutes and hours. Also, it implies that the respondents are using an analog clock in their class for discussion purposes in Math, Science, and Physics. Another implication is that they have learned to read it at home. The statement is evident in Table 2 of this part, where versatility got the highest mean of four ($\bar{x} = 4$). The result is contrary to the findings of Collins and Espada (2014), which concluded that though college students have a clock at home and wear wristwatches, they cannot read the time, particularly the by-five counting, because they use it for fashion purposes only. Whereas, the pupils in Bambang National High School can read in seconds because they use the analog clock at home and school for educational purposes and daily life applications. Therefore, their level is classified as independent. To furtherly explain, Vinikas (2014) defined an independent learner as a pupil who learns things by themselves out of curiosity, reading, and research. Therefore, when faced with a similar situation, they know what to do. With this level of skills, the learners are motivated to learn more. As a result, there is a positive academic performance.

The level of analog reading skills of the respondents in terms of minutes is presented in

Table 4, followed by interpretations and implications.

Table 4
Level of Analog Reading Skills of the Respondents in Terms of Minutes

Level	Grading Scale	Frequency	Percentage
Independent	80-100 %	45	100
Instructional	59-79%	0	0
Frustration	1-58%	0	0
	Total	45	100
Mean Rating			100
Standard Deviation			0
Qualitative Description			Independent

Referring to Table 4, the analog reading skills of the respondents in terms of minutes are independent, with a mean rating of one hundred ($\bar{x} = 100$) and a standard deviation of zero ($\sigma = 0$).

Similar to the result of Table 3, the implication is: the respondents can tell time by minutes. Because they are aware of it. They might have an analog clock at home and school, and use it for educational purposes and daily life applications.

Concerning Bouchrika (2025), who explained the role of Cognitive Load Theory. This study reiterates its explanation that learners can readily apply what they learned at home and school. With that, the result is proof of the Cognitive Load Theory, suggesting that learning is most effective when resources or materials are available at hand or are always visible. Because for some who are curious, will give time to learn it.

Table 5 shows the level of analog reading skills of the respondents in terms of hours.

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Table 5
Level of Analog Reading Skills of the Respondents in Terms of Hours

Level	Grading Scale	Frequency	Percentage
Independent	80-100 %	24	53
Instructional	59-79%	14	31
Frustration	1-58%	7	16
	Total	45	100
Mean Rating			76
Standard Deviation			33
Qualitative Description			Instructional

As presented in Table 5, the level of analog reading skills of the respondents is instructional with a mean rating of seventy-six ($\bar{x}$ = 76) and a standard deviation of thirty-three (σ = 33).

The result implies that the respondents need assistance and guidance in reading the hours of an analog clock. Different from the findings of other attributes of an analog clock, their difficulty of reading the hour could be affected by their total reliance on digital time when it comes to reading a bigger number, though it was reflected earlier that they have an independent minutes and seconds reading.

To find the reason behind this, it is recommended to conduct a further study about the possible factors contributing to the differences of the results in their ability to read an analog clock in seconds, minutes, and hours. The purpose is to prove the statement of Williams (2023) from Quora (2025) that people today, particularly students, do not appreciate the art of reading an analog clock. As a result, they just tend to look at their analog clock without giving attention to reading it according to its function.

The level of reading skills of the respondents in terms of time-related vocabulary is presented below:

Table 6
Level of Analog Reading Skills of the Respondents in Terms of Standard Time-Related Vocabulary

Level	Grading Scale	Frequency	Percentage
Independent	80-100 %	0	0
Instructional	59-79%	0	0
Frustration	1-58%	45	100
	Total	45	100
Mean Rating			0
Standard Deviation			0
Qualitative Description			Frustration

It can be observed in Table 6 that the level of analog reading skills of the respondents in terms of standard time-related vocabulary is frustration. This is supported by a mean rating and a standard deviation of zero ($\bar{x}$ = 0; σ = 33).

Devastating as it may seem, the result is clear proof that students nowadays are not aware and familiar with time-related vocabulary like quarter to, past eleven, thirty minutes to twelve, and so on. The culprit behind this dilemma is evident: too much reliance on technology. Maybe, some of them can write the numbers One o'clock, twelve thirty, forty minutes to one PM, but they do not know how to say it in words, the vocabulary. Looking back at the prior result on reading hours, it shows that they belong to frustration level. So it follows that their time-related vocabulary is poor.

Again, this lamentable result could have been the negative result of too much reliance on technology, particularly digital time. (Williams, 2024; Curtis, 2021 as cited by Quora, 2025). It is worth noting that analog clocks must be given value even within this digital era because they can be used on many occasions and instances, such as teaching basic Mathematical concepts at school, understanding historical timekeeping, and developing essential life skills. (Dedham Country Day). Another important aspect to be highlighted is that reading an analog clock is also a skill to be mastered (Tanner, 2020, as cited by Quora, 2025).

Problem 4. ***Is there a significant difference between the perceived benefits of a digital time and an analog clock?***

To ascertain the answer to this problem, a t-test was used. The result is presented in Table 7.

Table 7
Significant Difference Between the Perceived Benefits of a Digital Time and an Analog Clock

Variables	T-test	P-value	T-critical	Remark
Digital Time Analog Clock	1.11	0.27	±2.02	Not significant

alpha: 0.05

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As reflected in the table above, there is no significant difference between the perceived benefits of a digital time and an analog clock. The P-value of 0.27 is greater than the alpha of 0.05, and the computed T-test of 1.11 is less than the T-critical of 2.02.

The output suggests that the respondents have equal perception of digital time and analog clock. They perceived it to be highly beneficial. However, their level of perception did not reflect in their assessment test, since they got frustration level in the reading hours and standard time-related vocabulary.

The result only proves the following statements cited at Quora (2024): They do not practice reading it. They do not apply it in their daily life application (Williams, 2023); Students rely too much on their phone, even when they are supposed to check the time (Werbeloff, 2019); It is skill to be mastered, not just a part of curriculum to be thought (Tanner, 2020); They do not train reading it (Williams, 2024); Digital time is dominant. While an analog clock is perceived as irrelevant (Curtis, 2021).
Therefore, the null hypothesis is accepted.

VI. CONCLUSION

Based on the conducted survey and assessment test among the forty-five (45) purposively selected Senior High School Students at Bambang National High School, the respondents gave a high perception on the accuracy (DT: $\bar{x} = 4$; AC: $\bar{x} = 4$), durability (DT: $\bar{x} = 3$; AC: $\bar{x} = 3$), and versatility (DT: $\bar{x} = 4$; AC: $\bar{x} = 4$) of the digital time and analog clock. Their perception about the benefits of the said variables did not alter. These findings support and accept the null hypothesis of the study. However, their high perception about the benefits of the digital time and analog clock did not reflect in their formative test, showing a frustration level of analog clock reading skills in terms of and standard time-related vocabulary ($\bar{x} = 0$), except in seconds ($\bar{x} = 99$), minutes ($\bar{x} = 100$), and hour ($\bar{x} = 76$) which they showed an exemplary or independent level. Regardless of the differences in the result of the attribute, the overall level of analog reading skills of the respondents is instruction with an overall mean of sixty-eight point fifty- two ($\bar{x} = 68.52$). The result of this study prompted the researcher to conduct action research with a recommended feasible intervention program. Alongside, raising the level of awareness among all responsible stakeholders about the current situation of all learners, especially high school and college students. This could be done through the Facebook campaign, or maybe by creating educational handouts explaining the need and importance of analog clocks and exposing the drawbacks of too much reliance on digital time.

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