

WHITEBOARDS IN PEDAGOGICAL SETTINGS: LEAVE IT OR USE IT?

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Abstract

Purpose of the study: This study aimed at finding out the efficiency of traditional whiteboard use in classroom settings. It is known that there are a lot of advancements in teaching and learning tools, including the means of whiteboards which can be altered by using projectors.

Methodology: This study was mainly under the qualitative design where the authors mainly weighed the data reliability on the quality of the respondents' responses through the open-ended questionnaire set. There were 177 senior college students involved as the respondents, who volunteered to fill out the questionnaire set about the effectiveness and efficiency of whiteboard use in classroom settings. The data gathered from the questionnaire were then analyzed using percentages to see the students' agreement on the statements in the questionnaire set.

Main findings: The results indicate that students still perceive that whiteboards—despite its traditionalism—help assist their learning process.

Applications of this study: However, there are several points that teachers need to justify concerning the whiteboard skills namely general writing ability including handwriting legibility, setting-up ability, making optimum use of whiteboards, and cleaning up compliance.

Novelty/Originality of this study: This study takes into account the efficiency of conventional whiteboard uses in the globalized era. Although a lot of kinds of digital whiteboards and projectors are in use, students still consider that the use of conventional whiteboard is still necessary.

Keywords: *Whiteboards, Traditional Teaching Technique, Teacher-led Pedagogy, Student-centered Learning, Pedagogical Settings.*

INTRODUCTION

The process of teaching and learning involves various tools in an attempt to make learning instructions clear and understandable, for example, the use of whiteboards, over-head-projectors, handouts, and so on. Whiteboards have been ones as the longest teaching tools used in the means of pedagogy. Whiteboards make teaching and learning processes become more managed since the ample provisions of visual necessities are met (Al-Drees, et al. 2015). Besides, with the implementation of whiteboards, more features can be claimed as the teaching and learning efforts for the sake of pedagogical needs. However, Al-Drees, et al. (2015) argue that the implementation of whiteboards can be extended into the maximum level if there are support and acceptance from the members of institutional faculty. To be more specific, although there are numerous types of futuristic pedagogical technology, traditional whiteboards are still in use—but there are some advancements in the model and designs. In some places, it is still found the traditional blackboards and green-boards; there is also whiteboard with markers instead of the use of chalks as it is considered more practical rather than chalks. Besides, there are also some glass-boards which are also used to write on them with markers. This glass version is easier to take care of since it does not leave any disturbing markings on the platform so that it is always clean and clear every time the instructor writes teaching materials. Especially in Indonesia, the use of digital whiteboards or projectors can be more frequent because Indonesia is one of the electronics key production country (Ngoc & Binh, 2019).

Whiteboard is one of the old and most utilized showings that help in the classroom. It was the first progressive training device that came into the class in the 1800s and profoundly influenced the idea of educating for the following two centuries (Gursul & Tozmaz, 2010). Language class has turned out to be progressively reliant on the cutting-edge showing helps, for example, sight and sound; however, the whiteboard is the image of conventional educating (Gursul & Tozmaz, 2010). Ahmed and Conlan (2011) expressed that it is advantageous for rustic instructive establishments to have little spending plan than urban zones. In the establishments where innovation is not accessible, educators' resort to the conventional addresses method of instructing to make study classrooms vivacious and intriguing (Ahmed & Conlan, 2011). It started in 1801, with an expansive bit of slate held tight the divider in a school in Scotland to give data to an extensive group of people at one time. In the US by the mid-nineteenth century, each study hall had a board to educate

students. The current adaptation of the writing board is either green or other dark-colored boards. The whiteboards came into utilization during the late 1980s ([Muttappallymyalil, et al., 2016](#)).

However, in terms of technological advancements, whiteboards haven't been frequently altered by electronic whiteboards or even overhead projectors. Various studies have sought to determine the effects of the use of technology on student achievement, which are some negative effects of technology on student and teacher perception. The ideal goal for educators is to implement technology in the classroom and see definite positive effects on student achievement. The negative effects that are embraced by the use of technology are students are lacking comprehension and they tend to be less responsive ([Iserhagen, 1999](#)). Besides, he adds that the overuse of technology in the classroom can decrease both teachers' and students' motivation to learn. Motivation is the key to student's increased ability to learn and promote academic achievement. The other negative effect of the use of technology in the classroom setting is that [Garthwait and Weller \(2005\)](#) urge that the use of a laptop is the barricading students and teachers. More specifically, students want to make changes and corrections with laptops while teachers intend to give a clear and brief explanation through the whiteboard. From this condition, it is learned that students are more motivated in concern to the use of a laptop, and the teacher is more motivated to use the whiteboard. The computer-based cognitive tools have been used at various schools to ignite students' basic ability in performing reasoning and higher-order thinking ability. The example of the computer-based tools used at schools are Microsoft words, excel spreadsheets, language and translation tools, internet media, and other computerized language systems. In the attempt to excel students' higher-level order of thinking, media and innovation are directly in demand so that students can use them to communicate actively and passively. Mostly, it is the students their own who work and perform on such media, and they are demanded to decide what and how to learn without involving the individual assistance of their teachers and instructors. The performances that they can conduct alone are such as entering the data, analyzing data, language translation, and so on ([Reeves, 1998](#)).

Indeed, computers are not generally well-spread in its use within all schools across Indonesia, but the training and introduction to computer software and hardware have been long performed to all school stakeholders using various strategies. So that, it is still possible for the teachers to share whatever knowledge they have on transferring it to their students and to ensure that they can associate the knowledge to their students ([Becker, 2000](#)). However, when the teachers are unable to generate a learning situation where all students should be at the same pace of learning, some potential problems would arise as not all students have the same ability so that not all students can perform at the same speed of progress. This is seen as a disadvantage using this technology in the classroom since in class, some students can go quite fast and process all information shared by the teachers effortlessly; meanwhile, some students need further explanation, act performance, and demonstration, and also repeated explanation in where traditional tools such as whiteboards would help. The learning process would be said to fail if the instructor keeps on going with the pace where most students feel uncomfortable with. Teachers should be very sensitive when they get to know their students' behavior toward the learning atmosphere because most of the times, teachers are only in concern to bright and high-speed pace students while the slower ones are likely to deem beyond the teachers' insights ([Greenhow, et al., 2009](#)).

Although there are pros and cons of using the traditional whiteboards, indeed, they are still widely used. The whiteboards in this study are specified to what is called as 'static blackboard' by [Lawson-Body, et al. \(2015\)](#). The whiteboard or the static board is suspended on the wall in front of the class so that the instructors can write his/her points on it during his/her teaching time. It takes students to pay full attention and attendance so that they can manage to understand what the explanations are about. As [Lawson-Body, et al. \(2015\)](#) insert that the static board causes a lack of self-discipline, a lack of learning atmosphere, lack of class attendance, and it increases the learning on a reading basis. Furthermore, it relies more on answer keys from the instructor where students believe that the instructor knows everything so that he/she is the one who can give the correct answer.

The use of whiteboards in the world as it is today still very helpful for both students and teachers. As it was surveyed at the Teuku Umar university, Meulaboh, Indonesia, the authors found that although the projector is actively used in the classroom, students and lecturers still require a whiteboard as a platform to deliver ideas. After some unstructured interviewed within the preliminary survey, the lecturer stated that the whiteboard is still very useful to deliver ideas that spark on the spot, because it is impossible to make the students wait for her to make another slideshow. Besides, she further adds that a whiteboard is an absolute need in a place where the power shortage still frequently occurs. Besides, the unstructured interview was also done with students. They admitted that when the lecturer writes on a whiteboard, the ideas are easier to understand because the lecturer talks, writes, and explains at the same time. This makes the process more communicative compared to the use of a projector where they only have to sit, observe, and listen to the explanation. They said that they may end up sleepy. [Husniyah \(2019\)](#) further supports that teachers' pace is either motivational or demotivational factors for students' learning. If it is too fast or too slow, it can decrease students' motivation to learn.

Several previous studies have also been conducted concerning the use of traditional whiteboards. First, it is a study by [Shallcross and Harrison \(2007\)](#). In their study, the surveyed Chemistry students from 2004- 2005. The students' preference for the use of a material delivery method was investigated. The result suggests that the students preferred the use of non-electronic material presentations (where the teacher talks and explains) rather than the use of PowerPoint slides. Their reasons were too many materials given at the same time, irrelevant materials and diagrams are included, and

the presentation was too quick. The other study is the one conducted by [Fuson and Smith \(1998\)](#). The study investigated an urban Latino classroom in English and Spanish. It was found from this study that the use of chalkboard provides an interactive classroom environment. So, the students need to carefully follow the teacher's instruction is met; besides, the teacher's need to briefly explain step by step is also met. Besides, the teacher can also monitor the students at the time she/he explains and directly provide feedback to students who indicate that she/he has difficulties understanding the subject matter.

In an attempt to provide scientific grounding on the condition above, this study has the purpose to find out the students' perception toward the use of whiteboards in the teaching and learning process. From the literature provided previously, there has not been a researcher conducted concerning students' perception toward the use of a conventional whiteboard in Teuku Umar University, Meulaboh. This current study intends to fill such a gap. It is considered that the significance of this study to show all teaching performers that although there have been a lot of advancements in teaching, the space for conventional teaching aid still does well on students' perceptions. Of course, there are also some suggestions addressed to be deliberate as an effort for better use of whiteboards.

LITERATURE REVIEW

The utilization of whiteboard innovation to help the learning and learning process is a piece of imaginative teaching endeavors. It is the reason why the whiteboard becomes the principal subject of this study as it can spark the students' learning achievement. In this study, the use of whiteboard is seen as a creative learning effort that can be adjusted to affect students' scholarly performance. The utilization of whiteboards can manage students to be progressively creative in note-taking the courses. It is a human-arranged hypothesis on the improvement of imagination ([Bradford, et al., 2007](#)). Imagination improvement science is, for the most part, made to give and bolster inventive training. The hypothesis of inventiveness is then associated with innovative data innovation instruction.

Utilizing innovation in the classroom is guaranteed to be advantageous. These days are the days when slide-show introductions with eye-catching designs are used in almost every classroom. We live in an age where web journals, visit rooms, and web recordings are regular devices in our education system. However, a classroom can even now flourish when stripped down to a whiteboard. Utilizing whiteboards in educating improves teaching effectiveness and can increase the students' academic achievement. As teachers have a superior shot of achieving their students on the off chance that they have various yet organized teaching styles. Showing excessively quick or too moderate learning materials can make students lose their attention. And what happens when an advance board is in use—for example, a digital projector. On the other hand, writing on a whiteboard makes it simpler to control the pace of an address since it empowers writing while talking at the same time. And it is known this activity employs moderate speed so it eases the students to catch up the pace. Students need time to process new data and to take notes, however on the off chance that you talk too gradually, they may end up exhausted. But when using a whiteboard, a teacher can lead to the fluctuation of the pace to suit his/her style, his/her message, and his/her group of students. Directing the pace of an address helps control the measure of substance students get. Teaching with whiteboard enables the substance to be absorbed normally ([Bradford, et al., 2007](#)).

Then, it can help teachers with classroom management issues. Troublesome students might be less problematic on the off chance that they are inside an instructor's attention. A teacher that has strong attention to his/her students' activities will keep up a beneficial learning condition. Whiteboard usage helps to neutralize the classroom condition. To be more specific, when a whiteboard is used in a classroom, it should be with enough light, which means that all of the students' behavior is in the teacher's observation. Visual aids, similar to outlining in teaching, can be shown on a whiteboard to keep students' concentration. Students are all more ready to take part in a classroom setting so that they accept what they realize as normal in the classroom. Students who see teachers develop outlines on a whiteboard witness the way toward transforming written data into visual data ([Baltram, 1981](#)). Teachers ought to accentuate the significance of this aptitude and its potential applications.

Later, the use of whiteboards can enhance students' understanding. Writing materials on a whiteboard helps the teacher to submit obvious general direction to his/her students. The teacher can quickly address students' non-verbal communication and outward appearances that recommend perplexity about the material. Teaching with a whiteboard is particularly leverage for educators of students with different learning abilities. An instructor of students with different abilities should include adaptability inside his/her educating style. Important changes may incorporate not adhering to the exercise plan if students are not catching up with the material. Content written on the whiteboard can be enhanced with extra data or modified without issue. The notes that a teacher composes on the whiteboard are essential to a student's understanding ([Hendry, 2015](#)). Giving notes on a whiteboard builds the capacity of the student to take complete notes. With the data provided plainly in front of them, students can take better notes and they can later consolidate.

Finally, using a whiteboard can involve students more in the teaching and learning process. Getting students to take an interest makes class increasingly charming for both teachers and students. Teachers can have students write on the whiteboard to show their comprehension obviously about the material. Students may also alternate composition and addressing questions, physically recognizing zones of perplexity, or introducing elective points of view on the writing



board that may support their friends in the classroom. As it is considered from the research results by [Asnawi \(2015\)](#) that when using multimedia with peers, the students' performance increases. Similarly, when using traditional whiteboards, more interactions can be sparked and more peer interactions can happen which eventually leads to the success of the teaching and learning process.

Learning a foreign language for foreign students is the premier essential angle for individuals who can have far and wider perceptions. For most students around the globe, modifying the tools of instructing and learning can help. Training helps has turned out to be further developed, agreeable, valuable, and accommodating for students and teachers. The classroom is presently expanding its learning materials by permitting web, mixed media, projector, etc. other than the conventional writing board. The classroom is simply one more spot that has invited innovation alongside the days of interesting teaching components and students have turned out to be accustomed to taking assistance from the advanced showing helps, for example, learning media. Teachers are also welcoming advanced encouraging guides as it has taken teaching language to foreign students.

Advanced media carried the entire world into the classroom hall and little advancements will take the classroom to the world in return. The classroom is not viewed as just a container formed room loaded with students any longer. It is a spot to share information. To do such, teachers and students have begun to favour showing help, for example, interactive media and writing boards other than books, pens, and hand notes. [Hendry \(2015\)](#) depicted it as a course reading on a screen with some going with movement, a library of beneficial visual pictures, an accumulation of activities to exhibit chosen points. Online courses resulting in positive feedbacks and enhancements are also provided to accommodate more students in the teaching and learning process ([Hamzah, et al., 2019](#)).

A classroom would not be a fruitful learning place if the students are not persuaded to learn. Teachers are utilizing distinctive teaching aids, for example, board, and mixed media introductions to catch students' attention. These are known as conventional and current showing help individually. The utilization of innovation has begun to predominate around the 1990s where computers and web use began to spread its notoriety in classroom halls. At the point when educators instruct in manners that students learn in the present advanced age, students are substantially more occupied with the exercise content and are progressively intrigued by the information that the teachers share ([Lutz, 2010](#)).

METHODOLOGY

This study employed a qualitative approach. [Biklen and Bogdan \(1992\)](#) state that qualitative research uses the natural setting as the direct source of data. Besides, [Hale and Napier \(2013\)](#) state that in the qualitative method, the quality or characteristics of aspects are explored, described and interpreted. According to [Moleong \(2007\)](#), the qualitative approach for a study is to comprehend phenomena about a similar thing for research. This study focuses on analyzing, reviewing, and describing the use of whiteboards in the classroom setting. The descriptive research method helps to provide in-depth descriptions of wording in its text. [Biklen and Bogdan \(1992\)](#) state that descriptive research focuses on the data corpus that needed to be specified and described in their nature without any manipulation as it is needed in experimental design. Besides, [Biklen and Bogdan \(1992\)](#) further mention that qualitative research uses the natural setting as the direct source of data collection. It means that the researchers get involved and spend considerable time observing the data. The researchers try to get the information from the things happened by going to the natural setting without applying any manipulation ([Fraenkel & Wallen, 2006](#)). Besides, this study is not considered as a quantitatively designed study as, although utilizing a questionnaire for data collection, it used a closed-ended questionnaire which mainly considered the 'yes' and 'no' response from the respondents ([McLeod, 2019](#)). There have been no further statistical inferences that this study was seeking. In this study, the purpose was only to figure out the respondents' perception about the use of a whiteboard in the teaching and learning process which can also be seen as a case study design. The current study intended to find out the case that has become the issue for the respondents in terms of whiteboard using. The focus on the respondents' perception rather than on their ability gives a depiction that this study is qualitative.

The respondents involved in this study were 177 university students in the final year. They were volunteering to fill out the questionnaire set given by the researchers. The data collection was carried out from August 2018 to February 2019. Concerning the instrument used in this study, it is an 11-closed-ended questionnaire set that clarifies the students' perception about the use of whiteboards in learning to set. These are adapted from [Shinde and Shinde \(2015\)](#). For the data analysis, the percentage formula was utilized to be shown in data display, from which finally can be drawn conclusions.

RESULTS AND DISCUSSION

From the questionnaire set that had been distributed to the respondents, the result is as shown in the following Table 1.

Table 1: Result on students' perception toward the use of whiteboards in the learning setting

No	Statement	Yes	%	No	%
1	Writing on the whiteboard is time-wasting.	9	5.08	168	94.92
2	When the instructor writes on the whiteboard, the class is frequently distracted, and it becomes	167	94.35	10	5.65

	noisy.				
3	The instructor's writing is ready to read.	112	63.27	65	36.73
4	The instructor commonly writes the key highlights on the whiteboards.	160	90.39	17	9.61
5	The instructor divides the whiteboard into three or four parts.	21	11.86	156	88.14
6	The instructor marks the important points by holding or underlining the phrases.	175	98.87	2	1.13
7	After writing, the instructor stands in front of the whiteboard so that students cannot see his/her writing.	167	94.35	10	5.65
8	When the whiteboard is full of handwriting, but the instructor wants to write more, he/she only erases a little space that he/she needs for writing, not the whole whiteboard.	130	73.44	47	26.56
9	The instructor always asks whether his/her handwriting is readable or not.	87	49.15	90	50.85
10	The instructor always writes the title in the center of the whiteboard.	133	75.14	44	25.86
11	The instructor always cleans the whiteboard after teaching.	2	1.13	175	98.87
Total Average		105.72	59.73	71.27	40.36

Table 1 shows that the average of students who agree is 59.73% and those who disagreed are 40.36%. This can be roughly seen as an indicator that students believed that the traditional whiteboards do justice in helping their learning process. To be more specific, statement 1 which states that writing on whiteboards is an action that wastes time, was disagreed by the majority of the respondents which is 94.92% (168 respondents), and those who agreed were only 5.08% or 9 students. Later, in statement 2 which clarifies the fact about whether the class is frequently distracted and becomes noisy when the teacher writes, it was supported by 94.35% (167 students) and only 5.65% (10 students) who disagreed. This should be taken into account by teachers to lessen the condition where students get distracted when he/she writes on the whiteboard. This happens when the eye contact between the teacher and the students disconnected. As suggested by [Khan and Akbar \(2000\)](#), eye contact is the most powerful means of communication. Only 2-3 seconds of eye contact with each student can invite more courage and the willingness to take part in the lesson. [Khan, et al. \(2016\)](#) added that eye contact can motivate students to learn. They even suggest that there should be specific training for the use of eye contact in teaching for teachers. Next, 63.27% of the respondents or 112 of them agreed that the handwriting is easy to read. This is as suggested by [Mundy \(2003\)](#) that teachers need to write the letters as in printing mode so that the letters are large enough and easier to be read by the students. However, quite a few of the respondents report that the handwriting is difficult to read (36.73% or 65 students). [del Campo, et al. \(2013\)](#) support that when a whiteboard is used, the teachers must have good handwriting and good drawing.

Then, there is 90.39% (160 students) claimed that the instructor writes the key highlights on the whiteboards. On the contrary, most respondents stated that teachers do not divide the whiteboard into three or four parts (88.14% or 156 students); only 21 students that their teachers do so. Dividing whiteboards when writing is also a key notion that should be paid attention to. The information that is written on a whiteboard can be erased very fast and the students can forget the information. Just to mention, even the teacher who wrote it on their own can forget the exact information they had already written and where they had written it. So that, dividing the whiteboard into several sections would help in arranging the information on the whiteboards. Furthermore, it also helps students to remember the information when they are in need to retrieve the information. Educators are also good to be able to enhance their speech ability at the same time composing, and not just saying precisely what they have composed, to abstain from investing a lot of energy when writing. Fortunately, the teachers do mark the important points by bolding or underlining the phrases they already wrote on the whiteboard as this was agreed by 98.87% (175 students). There are only 2 respondents who disagreed. There has been a lot of evidence that making highlighting in learning can help students to manage the information gets to the long-term memory. As educational psychologists have claimed that to achieve learning objectives, several small strategies are usually employed by the learners, they are note-taking and highlighting. When they make highlights, they can come back and crosscheck their understanding, re-catch their memory by retrieving the path from their notes, and they can also repeat the practice over and over again independently ([Mayfield & Chase, 2002](#)).

There are five methods that are usually employed in helping the memory patch in learning as mentioned by [Bell and Limber \(2010\)](#), making a synopsis of learning, highlighting, mnemonic, using symbols, and note-taking. Clearly, we can see that the highlighting is one of the strategies so we can weigh the significance of highlighting information on the whiteboard when we write for our students. The methods normally claim to students since they are easy to utilize, do not

involve preparation, and do not expect students to contribute a lot of time past what is as of now required for perusing the material. To see any advantages explicit to highlighting and underlining, it is important to comprehend the reality of whether there is a system that is so natural to utilize really help students learn ([Dunlosky, et al., 2013](#)).

To go further, it stated in statement 7 that after writing; the teacher stands in front of the whiteboard so that students cannot see his/her writing. This condition was faced at 94.35% (167 respondents). It is not recommended to write on whiteboards in the complete sentence as this will bring students to copy-writing without, sometimes, even understanding what they write. It is better to use whiteboards as the means of clarification for example to consolidate graphs or pictures and to add more annotations on certain figures. Generally, the use of whiteboards can enhance when it is integrated with other digital media. As reported by [Meo, et al. \(2013\)](#) that students acquired more knowledge when they were first shown charts on PowerPoint and then the explanations followed on the whiteboard. In addition, as added by [Greiffenhagen \(2000\)](#), the whiteboard is not really applicable to use when the teacher also wants to discuss while writing as for sure, he/she will stand in front of the board. This made the students able to stay focused on the subject matter and absorb the knowledge deep into the core. Another point that we teachers should have in our dismay is what stated in statement 8: that most respondents (73.44% or 130 respondents) agreed that when the whiteboard is full of handwriting and the teacher wants to write more, he/she only erases a little space that he/she needs for writing, not the whole whiteboard. As [Mundy \(2003\)](#) suggests that when the teacher wants to write, she/he needs to rub the previous information on the whiteboard so that no overlapping data that students perceive. This creates another issue in students' note-taking process. Indeed, it is also a weakness to whiteboards, which is the information that has been erased, cannot be retrieved anymore ([Greiffenhagen, 2000](#)). In some cases, students have not taken the notes yet but as the pace of teaching keeps going, it has to be cleaned somehow. Even though it is seen that the students are merely passive and silent when taking notes, teachers should be convinced that their students are in the learning mode and they need time to process and store the information—either the one just delivered by the teachers or the one written on the board. Works by other psychological scholars help here. For instance, research recommends that students—from a youthful age—comprehend the world, effectively making importance while understanding writings, collaborating with nature, or chatting with others. Regardless of whether understudies are unobtrusively viewing an educator talk, they can be effectively occupied with a procedure of perception, or a brain-on work, the same number of instructors depict it. As [Bransford, et al. \(2000\)](#) stated that it is currently realized that small kids are skilful, dynamic operators of their own applied improvement. So, the psyche of the small kid has sprung up. This subjective turn in brain research is regularly alluded to as a constructivist way to deal with learning.

Later in statement 9, 90 students (50.85%) admitted that their teachers do not ask whether his/her handwriting is readable or not. However, almost the other half of the respondents agreed that their teachers do ask about this (49.15% or 87 students). The next point that the teachers should be responsible for when the write on the whiteboards is to write the title in the center of the whiteboard. This is important because as the teacher gets into the classroom, the title-writing is considered as an affirmation that the class has started under the related topic which is written large and clear on the whiteboard. Handwriting is as yet a vital aptitude in our general public, and the advancement of a proficient, singular style relies upon the dominance of fundamental abilities, which can be accomplished distinctly by able instructing and ordinary practice. To accomplish a reliable methodology in all classes, each instructor ought to comprehend and utilize the style portrayed in this book. Where usage of this penmanship style requires significant changes to class plans, it is recommended that the progressions ought to be presented at the lesser class level and be permitted to grow up through the school. Two significant components of penmanship are development and shape. It is not the states of letters which are of first significance when educating handwriting. The topic introduces the clues to the students, and it gives intrigue and inspiration. It concentrates on the exercise and its motivations. It additionally persuades students that they will profit by the lesson.

This statement was agreed by 75.14% of the respondents or 133 of them. However, there is 25.86% (44 respondents) who disagreed. Lastly, 175 students or 98.87% of the whole respondents reported that their teachers do not clean the whiteboard after teaching, there are only 2 respondents who noted that their teachers do so. Cleaning whiteboard after teaching is an issue in whiteboards or whiteboards as stated by [Greiffenhagen \(2000\)](#) that one of the disadvantages of this public display is that the users are not willing to erase it after using it. So, this issue needs to fix up by teachers who are currently still using these boards in their pedagogical settings.

All in all, [Mundy \(2003\)](#) refers to the so-called whiteboard skills—general writing, setting up-skill, effectuating the boards, and clearing up the board—that determines the learning process to possibly be successful. Since the clear and clear writing on the board, confident style of teaching, and well-organized materials can lead to better students' achievement. It is additionally the duty of the teachers to encourage learning, urge thinking, and attempt to relate what is already learned. It would be increasingly beneficial if the teacher stresses the centrality of the learning picked up in real life, so students become curious to know and learn. The students must be given a chance to apply gained information in different exercises. There ought to also be collaboration among students and the exchange of perspectives should be cultivated by the teachers with the goal that clashing perspectives can be considered, talked about, and settled.

A more precise display of the respondents' choice between 'yes' and 'no' is as shown in Figure 1.

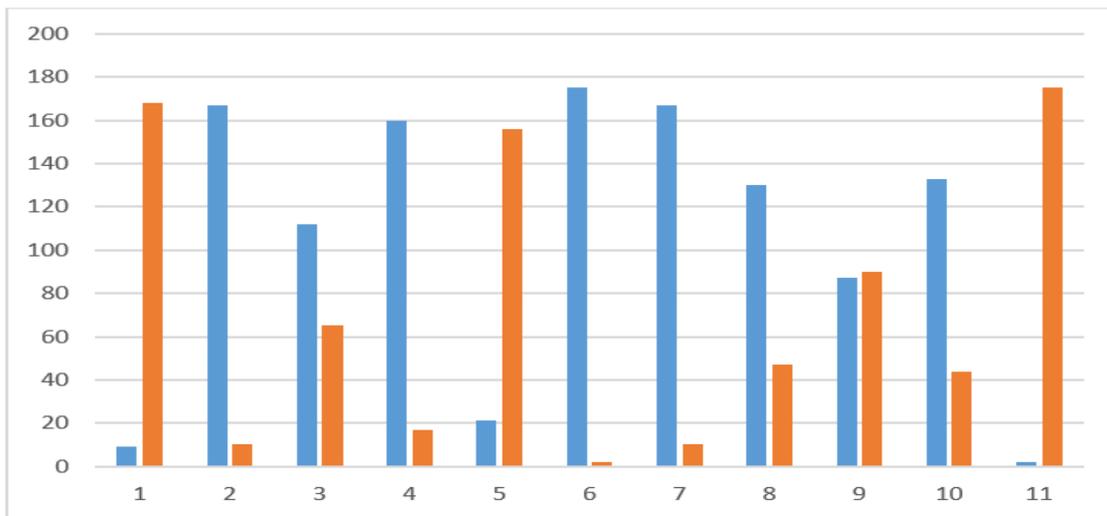


Figure 1: The respondents' choice between 'yes' and 'no'

In the figure above, it can be seen that most questions or statements are answered with the answer 'yes' by the respondents. The blue bars represent the option 'yes' while the red bars represent the 'no' option. In the first statement, we can observe that the majority of the participants stated 'yes' to the use of whiteboard is not a waste of time. Then in the second statement, where the questions asking about the action of writing in the whiteboard can read the classroom to a noisy situation. Although the majority have a consensus on this statement, they still perceived that the whiteboard use in the learning setting is useful.

Once a student should deal with the media and technology use in a classroom, the student can either choose to learn 'from' the media, or to learn 'with' the media. Learning 'from' the media is in regarding the use of instructions from computers or other guided framework instruction provided in the computerized systems. Meanwhile, learning 'with' the media is in regards to utilizing computer software such as data analysis and other constructivist activities (Reeves, 1998). In addition to that, media can be utilized adequately in classroom settings where students can work independently or can also work under the teachers' assistance. Media is seen to play a huge role in the instruction of students' activities with some exceptionalities to students with the issues of special needs. The most widely recognized utilization of media in an instructional circumstance is for the supplemental help of the teacher in the classroom setting to upgrade the learning process (Heinich, et al., 1996). Furthermore, Locatis and Atkinson (1990) add that the use of media needs to be guided by standard operational settings and learning settings. For the instructional utilization of media, projects are rather structured deliberately to make the teaching and learning condition all the more fascinating and successful.

Besides, Montgomery (1995) further investigates the utilization of media in improving students' learning achievement with various learning styles. The results show that media fix the cracks between the division made accidentally within the students' learning styles. The results also suggest that there are three significant points to students' accounts considering that media is rather useful in helping their learning process; they are the material/sensation, the visual, and the sound-related (Chinhanu, 1995). The students who are prone to the materials lean towards learning by doing and engaging in this way by utilizing the direct approach using their hand's physical investigation of the world. Next, visual students favour visuals as they might suspect in pictures, while sound-related students tend to conceptualize best through subtleties in discourse. These distinctive learning styles point out the requirement for utilizing media and making teaching and learning a more dialogical procedure, rather than monotonous one.

CONCLUSION

From this study, it can be concluded that although the use of digital media in the technology era has partly altered the use of conventional whiteboards, students still perceive that the whiteboards help them in their learning process. In addition, the implication of this study is that there are some points related to handwriting legibility and whiteboard set-up that teachers and instructors need to take into account.

LIMITATION AND STUDY FORWARD

This study is not without limitations. In this study, the students' perception of the use of conventional boards in the teaching and learning process was investigated. It is expected that a broader aspect will be investigated by future researchers, for instance, the lecturers' or teachers' perspectives.

AUTHORS CONTRIBUTION

All authors have a specific contribution to this article. The first author was initiating the idea of researching this issue as well as reviewing a number of related literature on this article topic. Later on, the second author was responsible for collecting the data. Next, the third author worked on the data analysis and the data interpretation. Finally, the fourth

author was responsible for doing general editing several times before submission. Additionally, she also worked on reassuring the composition criteria such as grammar, mechanics, punctuation, as well as the unity and coherence of this article.

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