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Readability of Guideline Module for The Physics Learning Media Based Fix Whiteboard Under The Scheme In The Thinking Processes

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ABSTRACT

This paper aims to describe the readability of guideline module for the Physics learning media based fix-whiteboard build upon students' thinking processes. This study is an assessment of the development of guideline module for the Physics learning media based fix-whiteboard build upon thinking processes. The results show the level of module readability in displaying characteristics of the thinking processes, physical design of information presentation on the board, stage design of information presentation on the fix-board, and instructional design which using fix-board based media. Based on these results it can be concluded that the use of the guideline module for the Physics learning media based fix-whiteboard build upon thinking processes can be read well when being implemented in Physics class.

Keywords: readability, module, Physics learning media, fix-whiteboard, thinking processes

INTRODUCTION

The main facilities of every classroom either formal classroom learning, non-formal and in-formal is the board. None of the classrooms are not facilitated by the blackboard, whiteboard both large, medium and small; both black blackboard to chalk or white for markers.

Chalkboard in the classroom has an important role in the learning process. Whiteboard into learning media is important to deliver learning materials to students. Utilization blackboard always there to show the illustrations information or topic for discussion. Utilization media whiteboard effectively should use a good way (Hendratmoko, 2015)

Observations for assisting teachers to make the learning process in the classroom, it appears that the use of the blackboard is not optimal and plays well. The whiteboard is still widely used concurrently other visual media in the explanation, summarizing the results of the discussion, and place to display students work. Whiteboard that should have more of a role in helping students to access and understand the material is still not optimal yet.

Plan to use whiteboard in physics learning generally not really being implemented yet. It seems that

the lesson plan (RPP) has not written clearly matters what can be delivered orally and in writing. Can also be taken to make a lesson plan to include things, such things will be spoken teacher can be written narrative by italics letter and things to be written or broadcast can be written narrative in the box (Kristiyanto, 2014).

Use of the board at the possibility of similar physics learning in mathematics and engineering. In the study most of the whiteboard is used to write equations and sketches. Generally formulas and drawings listed on the board will be copied by students in his notebook.

The study of student's thinking processes during the learning process the information on the chalkboard media in Physics learning show that:

1. The thought process that occurs during the use of instructional media such as whiteboard is the assimilation process, so that the contents of the whiteboard must conform schemes already owned students and before writing the information on the board should be discussion or clarification prior to students agree.
2. Trends about students copy the formula and pictures Physics wholly or even the exact contents of the blackboard into a record sheet, so that the contents of

the whiteboard should properly fit the correct physics concept.

3. Trend about students need an idea intact in the appearance of the contents of text or pictures on the board, so that all students wherever the location of the seats need to access the contents of the whiteboard as a whole and are not obstructed and the size of the text or image in accordance with a large class.
4. The use of two or more media that is received by one senses the same will be destruction of information, so no need to use whiteboard presentation with pictures or other impressions simultaneously.
5. The combination of visual and verbal presentation simultaneously tend to reinforce understanding, so it is advisable when writing on the blackboard while saying what needs to be written (not to say anything else though an explanation of the contents of the text).
6. The use of marker ink or colored chalk in displaying text or image the detailed physics is not dominant over the access serving in stages the appearance of the text or image can be accessed whole process, so that the use of one ink color is not an issue

Based on the description above, it is necessary guide to the use of the blackboard appropriate student's thinking processes as the goal of providing information. This paper aims to describe the module design guide instructional media use physics-based fixed-blackboard by student's thinking process of assimilation stage.

METHODS

This descriptive study is an assessment of the development of instructional media guide to the use of fixed-board based on the findings of the thought process of assimilation stages, namely:

1. The contents of the blackboard about physics concepts are correct.
2. Before writing on the whiteboard, made verbal explanation or discussion to find something/ get the required information / accordance with the scheme already owned by the students. Article described the core information / discuss whiteboard written after all find like-minded students.
3. Body position of the teacher in writing on the board did not block the writing which is being written.
4. Did not write / re-draw on the whiteboard what to show on another display to students simultaneously.
5. Always write on the blackboard while saying the content of his writings.
6. The use of color, can be one color or more.

Legibility test this module is based on several aspects such as the clarity of description of module materials, ease in guiding the module to study independently, giving examples to clarify the accuracy of the material, the suitability of the picture with the material, and the ease of understanding the description of the activities.

RESULT AND DISCUSSION

Module compiled contains preliminary descriptions, directions, activities, assessment, and closing. In the introduction, described some of the findings of the thought processes and indicators of the successful use of this module in use whiteboard accordance thinking process of assimilation. On the instructions outlined suggestions stages of use of the blackboard-whiteboard be fixed as follows:

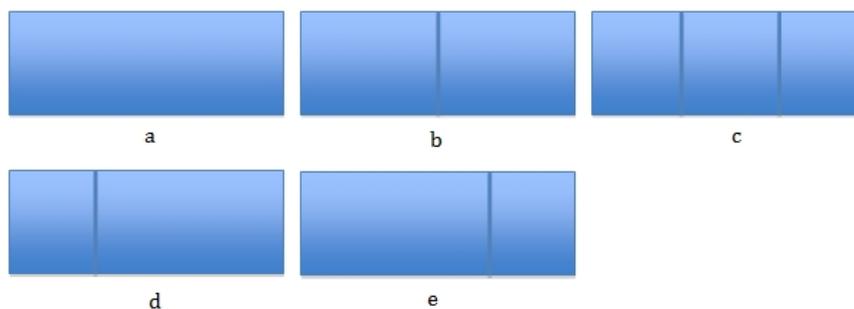


Figure 1. Cluster boundary line match the content of the text / image on the blackboard

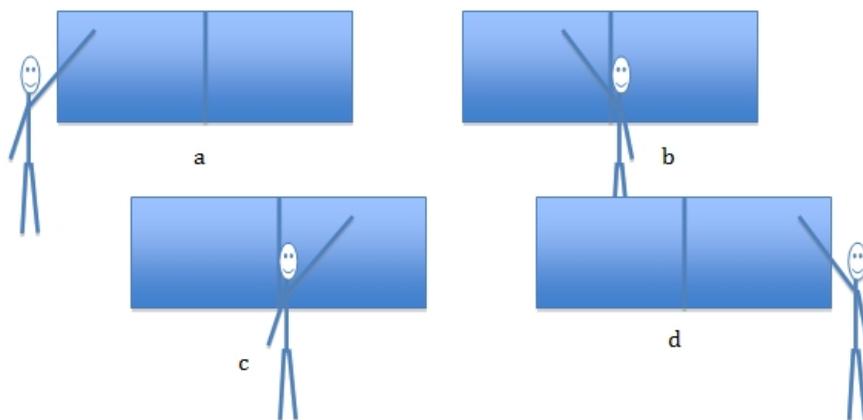


Figure 2. Standing on the boundary line of cluster blackboard when writing

1. Writing the content of the material on the chalkboard done after the briefing / discussion material. Need to conduct a discussion / explanation of the material before them on the board.
2. Depiction / writing done gradually to ensure students consider / able to access any ink streaks on the board (by always looking towards students)
3. Determination of the size of the text / image to fit the class.
4. Do not rewrite or redrawing unison with other similar impression
5. The division of the cluster to the blackboard wide. Need to define a line for to make the clusters on the whiteboard

Figure 1 shows the distribution of cluster by taking into account the contents of the text / image that will be appended on the board. If the plans are no images compounds that can not be divided, the blackboard does not need to be a line for the cluster (Figure 1a), or if it is not too long can be dividers clusters most wide and most narrow (Figure 1 d, e), whereas if there is no big picture and the contents of the sentence / formula was not too long can be divided into 2 or 3 equal parts (Figure 1 b, c).

1. The position of the body when writing. Need to practice to a standing position, facing the way, by moving the hand.
2. Figure 2 shows the position of the body when the teacher wrote on the blackboard to write your vision intact access students to the presentation of the text / image on the blackboard. With the position of the body around the cluster boundary lines blackboard prevent access barrier body into the vision.
3. Spelling aloud what is written on the blackboard.

On the activities outlined suggestions phases of activities to do, such as:

1. Determine the teaching materials to be presented

2. Prepare a lesson plan (learning scenarios), which contains what it would be delivered orally, and what would be written on the board (the contents of the plan board.)
3. Planning a cluster boundary lines blackboard
4. Perform the learning process using a whiteboard media based on the guidelines and plans that have been made.
5. Make a reflection of the implementation of the learning process that has been done.

In the assessment outlined that the assessment of this module there are two (2) sections, namely readability and enforceability. Assessment is an assessment of the legibility of the user module to module readability. Enforceability assessment module is assessing to users in utilizing this module is done through observation during the learning process by basing indicator of success. In the concluding section also addresses given author's suggestions and criticism.

Results of the assessment module readability level of the sample who is a lecturer of Physics Education are as follows:

Table 1 shows that the module has been excellent in the aspect of clarity of description of the material modules and ease of module in the guide to learn independently, while this module has been assessed both in terms of accuracy exemplification of clarifying the matter, the suitability of the picture with the material, and the ease of understanding the description of the activities.

The results showed reading level modules in both categories in displaying the characteristics of the thought process, the physical design of present information on the board, the design stage of the presentation of information on the fix-board, and instructional design that uses instructional media fix-board. Module Physics-based learning media use fix-whiteboard can be read by the

Table 1. Rate readability level modules

No	Rated Aspect	Assessment Results
1	Clarity module material description	Very good
2	Ease module in guided self-learning	Very good
3	The accuracy exemplification of clarifying the matter	Good
4	Conformity with the material image	Good
5	Ease of understanding the description of the activities	Good

thought process to be implemented in physics learning in the classroom.

The implementation of this module in the next class, the teacher can pay attention to the distribution of cluster blackboard, body position when writing, the need to conduct an explanation / discussion before writing the material on the board, do not rewrite the same visual impressions more, pay attention to the contents of the whiteboard according to the concept of Physics, pay attention to size text / image is appropriate class size, and writing while spell.

The findings in the study of this thought process has made researchers surprised because the knowledge gained previously directed that when writing on the blackboard is not talking. With the results of this study make the researchers looked for the reasons previously recommended to write without speaking. From the results of literature study found that the reason for the prohibition reason to write while talking is a courtesy or ethically after Eastern culture that prohibits speaking without facing the audience, because most teachers wrote to the position of the body to the board and turned the audience (Saputra, 2009).

CONCLUSION

Based on these results it can be concluded that the use of media learning modules Physics-based fixed-whiteboard can be read by the thought process to be implemented in physics learning in the classroom.

Based on the results of this study can be recommended for this research to be carried out assessment of the enforceability of the implementation of the module in the learning process in the classroom.

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