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Problem based learning: How can electricity cause the house fire?

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The aim of this study was to fine the result of Problem Based Learning with an activity in the topic of "How can electricity cause the house fire?"The concept of this question was separated into 3 parts; short circuit cause the overload current, a large amount of current can cause high heat, and high heat over the Ignition Temperature makes the material on fire. There were 62, 7th grade students participate in this study. Students were provided a question and asked to design their own experiment as groups. The question was "How can you ignite the fire with limited material?". The provided materials are rubber band, paper clip, AA battery, rope, gum and cotton pad. Presentation was taken place after the design session. Students had been doing the experiment as they design and find out if any material can use together to light the fire up. Some of them got stuck because of their design were not work. After that, teacher gave students a hint that they could use only Aluminum paper and battery to light the fire, the different is only the shape of the aluminum paper. Students did the experiment until they get the result. Teacher asked students to compare the Aluminum paper and the Wire. The activity took around 100 minutes to finish. Post-test was given to students after the class as an open-ended question to see if student can link the activity to a real-life situation. The question was "How can electricity cause the house fire?". From this activity, the result from qualitative data shows that the activity cannot make student understand the concepts behind the activity. 3.22% of students can get the first part of concept, 6.45% for the second part, and 29.03% of the third part. Moreover, there are some common misconception that also found. 20.96% of students have misconception that current in the circuit can be stored at a point and 16.13% of students think that current come from both terminal of battery and clash in the middle. In next study, this activity should modify the instruction and question that should provide more along the activity to help student to learn better about all three parts of the concepts.

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