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A study on the understanding of limitations of experiential viewpoints for 9th grade students.

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Summary: The mathematical object is conceptual. Thus we can not prove the property of a mathematical object in an experimental viewpoint but in a conceptual viewpoint. We performed the experiment for 28 middle school students to investigate whether they understand this. As a result, the majority of student didn't recognize the limits of the experimental method. We had also individual interviews with four students. As results, one student was exactly recognizing the limits of the experimental method, but he couldn't prove it logically. The others didn't recognize the limits of the experimental method. They thought that the proposition was already true regardless of the error. And one of them even thought that to be equal approximately was the same of to be equal exactly. Also, one student was confused between the experimental viewpoint and the conceptual viewpoint. This implies that it is necessary to help students understand the limits of the experimental method.

Classification: C23 D43

Keywords: viewpoint based on the experiment; viewpoint based on the concept; limit of experimental method