

Identification of How Pre-Service Physics Teachers Understand Image Formations through Virtual Objects in the Field of Geometric Optics and Development of a New Material to Exploit Virtual Objects

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Abstract : The aim of the study is to develop materials for understanding image formations through virtual objects in geometric optics. The images in physics course books are formed by using real objects. This results in mistakes in the features of images because of generalizations which leads to conceptual misunderstandings in learning. In this study it was intended to identify pre-service physics teachers misunderstandings arising from false generalizations. Focused group interview was used as a qualitative method. The findings of the study show that students have several misconceptions such as "the image in a plain mirror is always virtual". However a real image can be formed in a plain mirror. To explain a virtual object's image formation in a more understandable way an overhead projector and episcopes and their design was illustrated. The illustrations are original and several computer simulations will be suggested.

Keywords : computer simulations, geometric optics, physics education, students' misconceptions in physics

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