

Development of the teaching materials of convex lens science understanding and the production of an astronomical telescope

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Introduction

It is important, natural observation understands science. In order to observe nature, it is effective to use the observation apparatus of exclusive use. Observation apparatus is manufactured by the technology using a scientific principle. It is thought getting to know what kind of technology the observation apparatus of exclusive use is resembled and is used not only observes nature better, but that it leads to the right understanding of science and technology.

In the main subject, teaching-materials development of the astronomical telescope made from a convex lens and a board was performed, and the study effect about an understanding of optics and the technology of an astronomical telescope was considered.

The study purpose and a target

According to the junior high school government guidelines for teaching, a target is supporting the view and the view of relating these phenomena with everyday life and seeing scientifically, while making it understand about the regularity of light through the familiar observation about things and a phenomenon, and an experiment, and the contents are conducting the experiment about work of a convex lens, and an objective position, the position of an image, and an image placing, and finding out the relation of a difference.

Moreover, astronomical observation is performed with two subjects, the purposes are taking up the fundamental subject of the earth-science field, mastering the method of operating various apparatus, and the method of observing / observing an earth-science phenomenon, and deepening an understanding of the contents of a related lecture through them further, and being familiar with a heavenly body and learning about a planet and earth science, and a target is a thing which can understand and operate it about the structure of an astronomical telescope and which is become like in Akita University.

The contents of enforcement

The teaching materials of the astronomical telescope which refers to a commercial astronomical telescope assembly kit, and makes it from a convex lens, a board, and drawing paper were developed. The convex lens created the body tube by the board and drawing paper using the same thing as a commercial kit. The creation manual of an astronomical telescope is created and distributed and it was made to explain using the video image which photoed the assembly procedure.

Astronomical telescope creation was performed in the science experiment classroom of the local exchange enterprise Akita University week in Yokote of Akita University, and Akita University week in prefectural north.

Astronomical telescope creation was performed in the science partnership program enterprise Galileo's telescope which will be made all together in the Heisei 17 fiscal year.

Made it ask for 19 kinds of different focal lengths and calibers of a convex lens, two or more convex lenses were made to choose, and from the design of an astronomical telescope to creation was made to perform to each student at a university. The created astronomical telescope and the astronomical telescope currently used in the experiment were made to consider the difference when observing the moon's surface.

Result

According to the questionnaire result, by the question of how the grade of a lesson was, you think that the just right rate was high in it is a little high, and it was worthy of having seen on the whole and having received the lesson, whose rate of I think so and rather considering so was high in the question.

Consideration

According to a questionnaire result or signs that it has maneuvered, although work of an astronomical telescope was difficult for the child and the student, it can be said that satisfaction was high. Failing and thinking that it is difficult leads to the pleasure when completing, or joy, and it is considered that the interest and concern about science and technology deepen.