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ORGANIZING LESSONS ON THE STEAM APPROACH IN ASTRONOMY LESSONS

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ABSTRACT

This is article STEAM approach based on the sky sphere model preparation methodology about illuminated.

Keywords: Heaven sphere of the Universe northern and southern poles, sky Equator, mathematician horizon, daily parallels, zenith and rare.

INTRODUCTION

One of the factors that should be paid attention to when organizing pedagogical processes is ensuring student activity and organizing independent activities. The effectiveness of pedagogical processes depends not only on the organization of the educational process on a scientific basis, but also on the process of establishing extracurricular activities.

extracurricular activities to solve the problem of all -round development of students, their moral and educational education, and the formation of their vital activity.

In order to form astronomical concepts, observation and practical work in astronomy in class and extracurricular activities are of particular importance. In particular, making models and simple astronomical instruments and making observations through them in extracurricular activities has a positive effect. In particular, students' interest in the basics of science increases, the characteristics of observation, responsibility, sensitivity and order develop.

For example, by making and using simple astronomical instruments, such as a model of the celestial sphere, a quadrant-altimeter, a polar indicator, a simple passage instrument, students are expected to learn the basic concepts of practical and spherical astronomy perfectly.

practical and spherical astronomy, the positions of celestial bodies are determined using astronomical coordinate systems. The celestial sphere and its main elements form the fundamental basis of this section.

Usually, students find it a bit more difficult to get a perfect idea of the celestial sphere and its main elements . In order to expand their imagination and ensure their mastery, in extracurricular activities (independent education), students are assigned to make a model of the celestial sphere. In order to develop the understanding and skills of the celestial sphere, students are instructed to make the following 7 details from the drawing paper.

1) A circle with a diameter of 10 cm (Fig. 1)
2) 2 halves circle (picture 2)
3) 4 quarters circle (Figure 3)

Half and quarter in the circle to each other paste for addition part placed (in fig dashed). Circle prepared model sky meridian represents. Students circle, vertical line, world arrow, sky the equator projection, dream at the time the line will spend Pole height about to the theorem

according to dream line with universe arrow between corner geographical to the width equal to to be need. To the circle zenith, nadir, pole points, south and the north points is determined. Half to circles and the east and west points mark, half circle shown part fold into a circle is attached. It is horizontal plain harvest does. In detail shown part fold, the sky the equator to the projection is attached. As a result ready the sky model of the sphere harvest will be Figure 4)

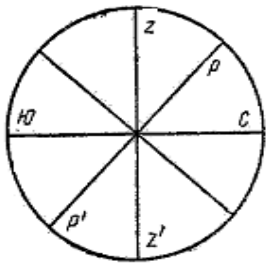

Figure 1

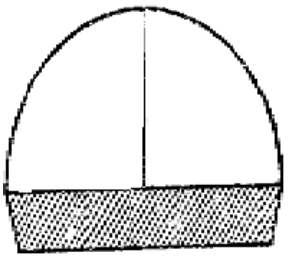

Figure 2

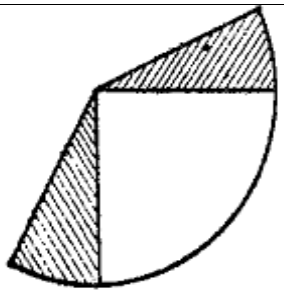

Figure 3

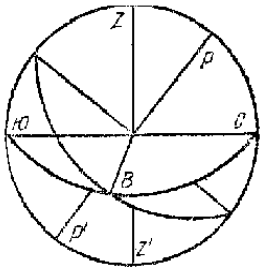

Figure 4

The model to make process students where level to thinking looking is evaluated. The model preparation through students "Heaven sphere and his main elements" topic easy master takes. Also independent thinking and work qualification have will be Make a model through of students spatial imagination increases, scientific outlook is formed, and aesthetic education is given of the sun Dream during height determiner the tool to make methodology let's see. Dream during the sun height measuring of tools inside the most convenient quadrant - height is a meter. He is two mutually upright placed board, to him fixed arcuate metal ruler and gorozontal curvature to the center special to the columns installed curvature to the center special to the columns from the mounted A stern consists of If the metal ruler is 45 cm long, it to degrees separate a must it's not. Such of the ruler every 1 cm to 2 ^{0} suitable will come. At this time wired of columns length 28.6 cm to be a must of the sun Dream during height from measuring before show through setup necessary and Dream at the time line i across orientation needed (Fig. 5).

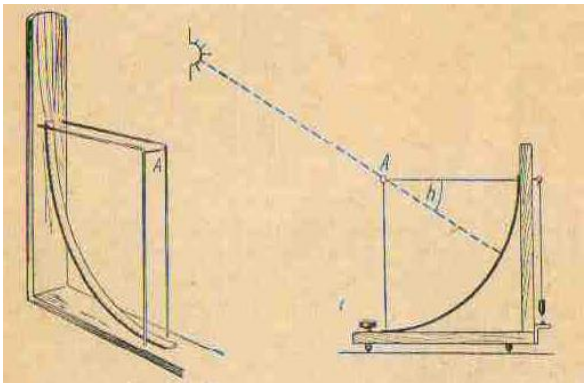

Fig. 5 quadrant - height gauge

The universe axis designation for in high school geographical on the field Earth digging through slope plain harvest to do can. But astronomy lessons for this enough it's not. Because universe arrow with mathematical horizon plane between corner measurement is also required will be done. That's why for universe the pole pointer instrument 1 meter long has been and to him enough to size have has been for example, school transporter installation Demand will be done. This is a tool demonstrative and enough accuracy with pole height identify will give. Transporter to the center show hangs (Figure 6). This tool is called "universe of the pole height and place geographical width between connection" topic in lighting hand will come.

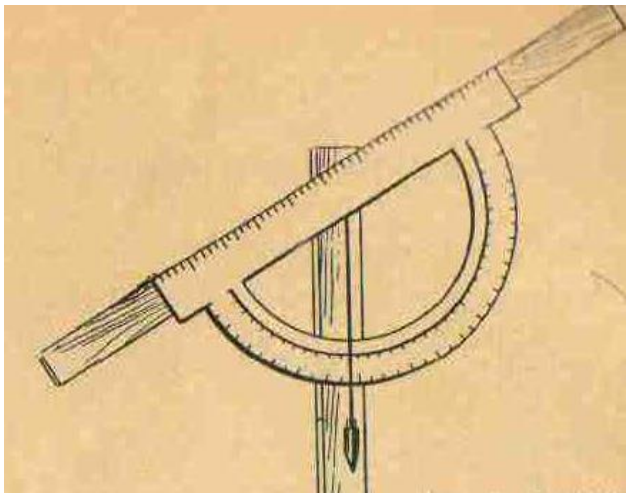

Fig. 6 Pole of the universe showing.

of the lamp the sky from the meridian pass observation for simple instrumental passage method use can. Of this for on the field Dream the line passing his two edge to the point two preferably South excel 5 meters high to him show hangs. His length enough big to be need of heaven big field take over need. North of the column length two meter It 's a show for him too hangs. Columns between the distance is 1.5-2 meters to be need. Such instrument one of time in itself one how many student of lighting culmination situation observation can

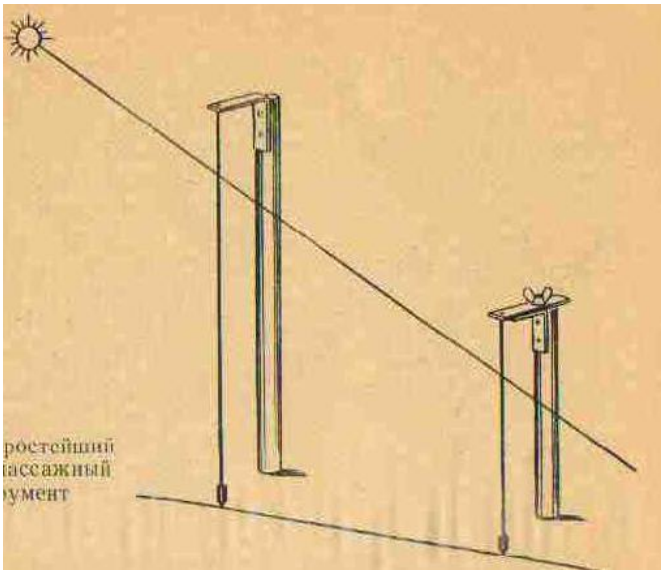

Figure 7 Simple passage instrument

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