

Let high school math teaching plug in the wings

--The practice and research of the Geometer's Sketchpad in high school mathematics teaching

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Abstract: The Geometer's Sketchpad is by people's education press and the national primary and secondary education research center jointly in 1966 from the introduction of American KeyCurriculumPress Company Tools Platform of excellent teaching courseware making tools, is an important tool for high school mathematics and physics teaching. This paper focuses on the application of the Geometer's Sketchpad in mathematics teaching process: flexible use of "Geometer's Sketchpad", can let the difficulties in traditional teaching is easy to understand; the use of "Geometer's Sketchpad", reveal the internal relations of knowledge; with "Geometer's Sketchpad" courseware to provide more opportunities for students to participate in learning, improve students ability of observation, analysis of the problem.

The Geometer's Sketchpad is the English name, the Chinese name is "Geometer's Sketchpad - the dynamic geometry of the century", is a platform for teaching software courseware, mainly used in the production of physics and mathematics courseware. In 1966, the people's education press and the National Center for primary and secondary education. With the Geometer's Sketchpad, in the course of mathematics and physics teaching activities, the dynamic performance of the geometric relationship between objects, it becomes very easy, intuitive.

Because it can dynamically show the relationship between geometric objects, the Geometric Sketchpad is very popular in the process of geometry (plane geometry, analytic geometry, projective geometry, etc.). Not only that, in the teaching of mathematics in the geometry of the probability problem, the limit problem, the trajectory of the physics teaching activities, such as free fall, etc.. The Geometer's Sketchpad to the point line and circle as the basic elements, through the transformation of basic elements, structure, measurement, calculation, animation, trajectory tracking, construct a more complex geometry, of course, its biggest advantage lies in its "dynamic", as long as the light with the mouse drag the selected random graphs one of the basic elements, such as a point, a line, a sinusoidal image and so on, it is said to show the geometric relationship immediately clear display in front of you.

With its help, we can draw a variety of geometric shapes, including the analytic geometry of the ellipse, hyperbola, parabola and other two curves. Of course, if a function expression is given, it can quickly make an image of the function. In addition to these features, it can also be used for all of the graphics you draw the translation, rotation and other forms of the transformation". The Geometer's Sketchpad provided the measure function, such as the "measurement" and "calculation", can help us to measure any object made, including a line length, the area of a rectangle, a cube, and the radian of an arc, an angle and so on. The biggest feature of the Geometer's Sketchpad is its dynamic nature, can make a lot of abstract graphics. In this dynamic process, students can imagine,

to sum up, you do not have to say anything, they can immediately see the geometric relationship between them and the inherent law.

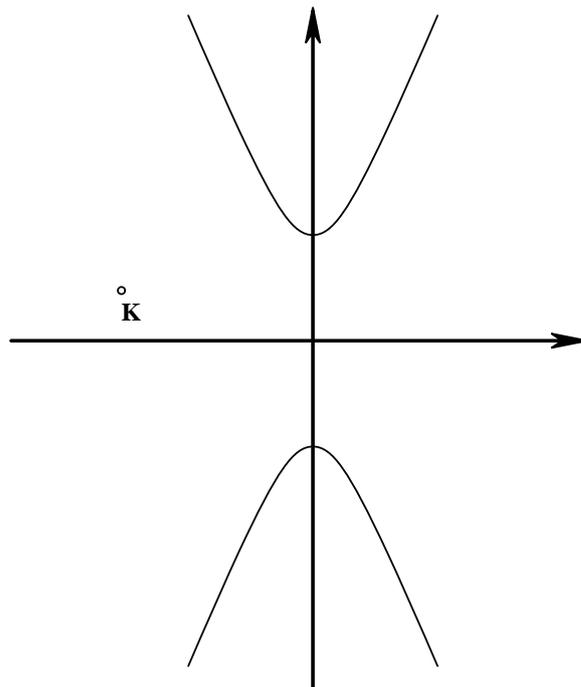
The flexible use of the Geometer's Sketchpad, can make the traditional teaching difficulties become easy to understand.

In the traditional teaching, the combination of ideas everywhere, encounter this problem, select the appropriate coordinate system through the object, the relationship between the draw graphics, the image can get some ideas to solve the problem. As the most important mathematics thought, mathematics teachers want Shuxingjieg to play its greatest potential, so many mathematicians in the teachers when class drawing, but also try to get clear, try to draw the image change trend. Although some teachers work very well, also drew a lot of such maps, but the figure is still dead, there is no way to let the students get vivid understanding. Sometimes, when the teacher asked whether students understand, students also answered yes, however, their brain doubts did not disappear, they don't understand why they did not understand thoroughly, because the teacher has to explain very clearly. Because they are thinking of the teacher to explain the idea, so understanding is not deep, a little knowledge is also very normal. In traditional teaching, such difficulties are also very much, encountered these difficulties, how to break into the educators need to solve the problem. "Geometer's Sketchpad" introduced, this problem becomes much easier, because the geometry become dynamic, vivid graphics, vivid, combination of graphics and the number of live, you want to do not understand sometimes are difficult to. "Geometer's Sketchpad" to solve the problem has been plagued educators for many years. We take the analytic geometry as an example, take a look at the "Geometer's Sketchpad" is how to help break through the traditional teaching difficulties.

The use of "Geometer's Sketchpad" to reveal the intrinsic link between knowledge

In the traditional teaching, we often draw on the blackboard static graphics or images, these graphics or images so that the original part of the connection, the fragmented, so that we can not understand their links. For example, when discussing the characteristics of the shape of the curve represented by the equation, it is generally the first into the standard equation, the derivation is always from theory to theory, the understanding is static, the lack of intuitive, visual. As figure 3,

The "Geometer's Sketchpad", as long as you drag understand, change the horizontal coordinate point, will be very easy to see when the K in the changing (from large to small) in the process that the curve equation is how by hyperbola (upward opening under) deformation as an ellipse, and by vertical elliptic "into" cross ellipse ", and finally into a hyperbola (opening to the left).



Three, using the Geometer's Sketchpad courseware to provide students with more opportunities to participate in learning, improve students' ability to observe and analyze problems

In the process of teaching, students should be reflected in the characteristics of the master, so that students themselves more involved in the teaching process, rather than passive acceptance of teaching. "Geometer's Sketchpad" courseware has the characteristics of progressive, image, flexible, intuitive picture which shows not only can be repeated, and can adjust the rhythm so that students accept the demonstration, and processing information, help students form a good knowledge structure

Conclusion

In the problem solving time, don't stay in the eyes and to test itself, through the derivation, observation, found the objective laws and mathematical ideas contained in the title, and the spirit of innovation to cultivate students' mathematical literacy so as to better the. From this point of view, through practice cognition and practice -- the process of recognition, to enable students to consciously take the initiative, deeply involved in the teaching activities, from the two aspects of the development of mathematical ability to explore, cultivate the spirit of innovation, strengthen the consciousness of application, it is a concrete manifestation of the implementation of quality education, in order to develop education the role of.

In short, the rapid development of science and technology, the society has put forward higher requirements for education. As a mathematics educator, we should keep pace with the times, learn to use the same technology like geometric sketchpad software with the auxiliary mathematics teaching process for us, so as to make the class more vivid, simple, popular, in order to make students more accelerate the music to learn math, more autonomy to learn mathematics, also divergent thinking, in order to better cultivate students' creative thinking, in order to make our teaching meet the needs of the development of education, to cultivate more and more talents, make our nation set in the world of the forest.

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