On materials which allows pupils to find out mathematical propositions using snapping on GeoGebra

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In this paper, we discuss the effectiveness of snapping function in mathematics teaching materials on GeoGebra. Here, we define the snapping function as "a function where an object is attracted like a magnet when it approaches another object." However, it is different from "snap to Grid" and "Fixed to Grid" in GeoGebra. The snapping function can be implemented using commands provided with GeoGebra, and in fact some contents with the snapping function has already been released on GeoGebraTube. However, in present circumstances, sufficient consideration has not been carried out in terms of how to make effective teaching materials using the snapping function. On the other hand, we think that it is necessary for pupils to move their hands while thinking in order for them to act on their own initiative. We propose effective teaching materials using the snapping function, and we consider the advantages of making the teaching materials using the snapping function from the following viewpoint:

1. Because objects such as points and polygons are accurately placed in the exact positions, thereby the pupils are able to feel a sense of accomplishment.
2. While being spread the range of pupil activities, pupils can be guided so that it is easy to find the answer that the teacher indicates.
3. The teacher can bury some invisible hints, and pupils can enjoy them as treasure hunting.

In this paper, we introduce teaching materials of Pythagorean theorem and Apollonius' circle using the function that a point snaps to graphs of functions and geometric figures. In the future works, we plan to improve the snapping function so that not only the point, but also the arbitrary objects can snap to other objects. And we will publish our teaching materials on our Web page according to the Japanese course guidelines.

Reference URL:`http://www.aharalab.sakura.ne.jp/geogebra/index.php`

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