

Developing Geometry Software for Exploration---

Geometry Player

Abstract

van Hiele proposed the geometric learning theory and emphasized that manipulations and explorations are important in geometric learning. Being restricted to instructional tools, teachers often have difficulties to present the dynamic process of geometric figures entirely. Students also are lack of well-designed tools helping them make constructions, manipulations, experiments, observations, inductions and reasoning. Applying information technology into geometric instruction may solve these problems.

As we all know, Flash has been a powerful tool to create animations on the web. With Flash, we can design innovative and vital animations in the internet. With its strong functions, Flash ActionScript could be used to create highly interactive software. However, Flash is designed for the creating of interactive web pages. It is inconvenient to use flash to develop digital materials for geometric explorations. The purposes of study are aimed to create mathematics function library and use them to build a series of mathematic interactive symbols. After this development, the designs of geometric digital materials will be easy. Finally a geometry software called “Geometry Player” was developed. In designing this software, we referred to van Hiele’s geometric learning theory, Duval’s cognition comprehension theory of geometric figures and Paivio’s dynamic image theory. Some application examples are also included in this study. It is hoped that Geometry Player can be a good assistant for teachers and also a nice partner for students.

Nowadays Flash is not only a software for designing animations on the web but also a powerful tool for creating highly interactive digital materials. How can Flash be used to develop digital materials for other mathematics topics and learning content, what are the effective applications of these digital materials, and what will be the effects on students’ learning, these need future study.

Key words: Flash, ActionScript, Geometry Player, Function, Interactive Symbol