

The purposes of the present study included: 1) to develop mathematics learning activities based on Constructivist Theory using mind mapping techniques for teaching statistics to grade 9 students, and 2) to enhance the students' learning achievement so that they made a mean learning achievement score at least 70% or better and at least 80% of them could make 70% of the full marks or better. The sample group consisted of 38 grade-9 students in Wat Angkaew (Jeep Pankam) School, under the Bangkok Metropolitan Municipality, during the second semester of the 2008 school year.

The study followed action research procedure consisting of 3 action spirals. Three categories of tools were used in the study, i.e. 1) action tool which comprised of 12 lesson plans based on Constructive Theory using mind mapping techniques for teaching statistics to the sample group, 2) reflection tool which comprised of a teacher's teaching behavior observation form, a student learning behavior observation form, a learning-activity outcome recording form, a student interview form, and end-of-spiral quizzes, and 3) an evaluation tool which was a mathematics learning achievement test comprising of 30 items of 4-alternative multiple-choice test. The collected data were analyzed by means of arithmetic mean, percentage, standard deviation, and the results were presented in the form of a descriptive report.

Results of the study:

1. The mathematics learning activities based on Constructivist Theory using mind mapping techniques as has been developed consist of 4 steps as follows:

- 1.1 The introduction which is a preparedness step where the students are asked questions for them to answer and discuss.

1.2 The instruction which comprises 2 sub-steps, i.e. 2.1) the building of intelligence conflict in which the teacher presents problem situations relating to the students' daily life for them to solve individually in order to build up a new intelligence structure, 2.2) the reflection activity which consists three features of (1) small group activity in which the students discuss and present their ideas for the methods and solutions to their group and group members together verify the presentations, (2) large group activity in which small group's representatives are randomly selected to present their group's methods and solutions, (3) the building up of new problem situations that are related to the previous ones.

1.3 The conclusion of the building up of new intelligence structure. The students together conclude their ideas, principles and problem-solving process before summarizing them in the form of a mind mapping.

1.4 The measurement and evaluation in which the teacher evaluates the students' performance from the behavior observation forms and the mind mappings.

2. The students made a mean achievement score of 75.53%, and 84.21% of them made an achievement score of 70% of the full marks or better.

It was further found that the students have developed desirable traits of systematic thinking, rationality, sense of responsibility, and the ability to work with others cooperatively.