ABSTRACT

All students have strengths and abilities, but each student may have a preferred way of using these abilities for learning. This preferred way of learning is his/her natural way of learning. The ways, tendencies, preferences and the conditions under which a person best learns is referred as his/her learning style. Understanding that each student has unique strengths and weaknesses related to the ways in which they approach learning is an important component of effective instruction.

Experimentation has shown that the two different sides, or hemispheres, of the brain are responsible for different manners of thinking. Most individuals have a distinct preference for one of these styles of thinking. Some, however are more whole brained and equally adept at both modes. Research has demonstrated that students are capable of mastering new skills if they are taught through instructional methods that complement their hemispheric preference. Thus teachers should consider both learning styles and hemispheric preferences of students while teaching. 4MAT System of Instructional Design is an eight step cycle of instruction that combines four learning styles and students’ preferences for right-brain or left-brain modes of learning.

The present study was aimed to test the effectiveness of 4MAT System of Instructional Design on Learning Styles, Hemispheric Preferences and Achievement in Physics of students at Secondary Level. The study was conducted by using experimental method and the design selected was pre-test – post-test non-equivalent group design. The samples were selected using stratified random sampling technique. Two schools from Kottayam District were selected for the experiment, giving due weightage to gender and Type of School Management. The sample of the experiment consisted of 248 students of standard IX. Out of six divisions taken, three were randomly taken as experimental groups and three as control groups. The experimental group was taught using 4MAT System of Instructional Design and control group by Activity Oriented Method. The investigator herself conducted classes for both the groups.
Before treatment, the investigator identified and compared the Learning Styles (using the Learning Style Inventory) and Hemispheric Preferences (using SOLAT) of the students in the experimental and control groups. The investigator also compared the Achievement in Physics of students in the experimental and control groups by administering an Achievement test in Physics. After the treatment, again the Learning Styles, Hemispheric Preferences and Achievement in Physics of the students in the experimental and control groups were compared by administering the same tests which were used as pre-tests. In addition to that, a delayed post-test was also employed to both the groups about one month after the completion of the experiment. The results of the study indicated that 4MAT System of Instructional Design is effective on Learning Style Preferences of students at Secondary level. i.e. the students have preferred all the Learning Styles as a result of the treatment using 4MAT System of Instructional Design. The study also revealed that 4MAT System of Instructional Design is effective on Hemispheric Preferences of students at Secondary level. i.e. the students have preferred both the Hemispheres and the Whole Brain while learning as a result of the treatment using 4MAT System of Instructional Design. Individuals utilized both right- and left-brain processing techniques which ensured the education of the whole person. Again, the present study revealed that the Achievement in Physics of students taught using 4MAT System of Instructional Design is higher than that of those taught using Activity Oriented Method. i.e. the post-test scores of students taught using 4MAT System of Instructional Design is higher than those taught using Activity Oriented Method. This reveals that use of 4MAT System of Instructional Design in the class brings better achievement.

Another important finding of the present study was that using 4MAT System of Instructional Design, the learning retention is improved and thus this Instructional Design is effective in retaining learning information in long term memory. This recommends the implementation of 4MAT System of Instructional Design in secondary school curriculum so as to retain the learned material for a longer period of time.