**The Effects of Geography Information System (GIS) Based Teaching on Underachieving Students' Mastery Goal and Achievement**

## ABSTRACT

Recent studies indicate that the number of students electing to study Geography in Malaysian upper secondary schools, and their level of achievement in the subject, has declined. The main factor appears to be a lack of motivation. Yet there has been little research into the impact of instructional methods on Geography students' motivation and their learning outcomes. This study applies a concurrent triangulation mixed method model to determine the effect of GIS based teaching on underachieving students' achievement and their motivation to learn Geography. The quantitative data were collected through a quasi-experimental design while the qualitative data were collected through students' interviews. The treatment groups included 44 students and control group with 40 students. For the treatment group, a unit on the type and distribution of world vegetation was given with GIS-based lesson material. For the control group, the same subject matter was presented using the traditional teaching methods. The quantitative evaluation showed the mastery goal and achievement post-test mean score of experiment group student participants' are significantly higher than control group student participants. The evaluations of student participants' interviews are consistent with quantitative findings. The triangulation of the quantitative and qualitative data reveals that GIS-based teaching had a more positive effect as compared to traditional teaching methods in enhancing participants' mastery goal learning motivation and achievement in the topics being taught in the classroom. Thus, it is possible to draw overall conclusion that GIS based teaching has positively impact the student participants' achievement and motivation to learn Geography.