THE INTERNET AS AN INFORMAL LEARNING ENVIRONMENT: ASSESSING KNOWLEDGE ACQUISITION OF SCIENCE AND ENGINEERING STUDENTS USING CONSTRUCTIVIST AND OBJECTIVIST FORMATS

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This study examined the effects of two different instructional formats on Internet WebPages in an informal learning environment. The purposes of this study are to (a) identify optimal instructional formats for on-line learning; (b) identify the relationship between post-assessment scores and the student’s gender, age or racial identity; (c) examine the effects of verbal aptitudes on learning in different formats; (d) identify relationships between computer attitudes and achievement; and (e) identify the potential power for self-regulated learning and self-efficacy on Internet WebPages.

Two learning strategy modules were developed: a constructivist and an objectivist instruction module. The study program consisted of an on-line consent form; a computer attitude survey; a Motivated Strategies for Learning Questionnaire; a verbal aptitude test; a pre-assessment; instructional directions followed by the instructional module and a post-assessment. The study tested 145 post-secondary science and engineering participants from the University of Florida. Participants were randomly assigned to one of two treatment groups or a control in a pretest/posttest design.

An analysis of covariance with general linear models was used to account for effects of individual difference variables and aptitude treatment interaction (ATI). This statistical procedure was used to determine the relationships among the dependent variable, the achievement on each of the formats and the independent variables, attitudes, gender, racial identity, verbal aptitudes, and self-regulated learning/self-efficacy. Significant results at $\alpha = .05$ were found for none of these variables. However, a linear prediction of age shows that older participants scored higher on the post-assessment after completing the objectivist module. Although there were no significant differences between the learning format and the variables, there was a difference in achievement between the modules and the control. Therefore, it is possible that regardless of characteristics, science and engineering students can learn on-line technical material.