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Retaining Student Interest in Instructional Materials: Comparing Learning Outcomes of Students in a Historically Black University versus a Predominantly White University

Communicating information technology concepts at the graduate level could be a difficult albeit challenging task when faced with a heterogeneous class made of students with varied backgrounds. One tool that has been identified as helping students understand complex technology concepts is multimedia instructional materials. This research investigates the perceptions of graduate business students on improvement of their higher-level cognitive skills when they participated in a multimedia based case study that involved making a multimillion decision to implement a new Point of Sale system at the Chick-fil-A food chain. Two groups of graduate students participated in an experiment—one group from an HBCU and the other group from a predominantly white university (PWI). Both groups analyzed the case study and made their recommendations. Two questionnaires measured their perceptions on the improvements achieved on different constructs. The research in particular focuses on learning-driven factors.

Learning-Driven Factors, constructs that show the intrinsic value of the instructional materials to the end-user, have been found to be fundamental in improving a learner's higher order cognitive skills needed to communicate technical concepts like those in Information Technology (IT). Learning-Driven Factor is composed of constructs that show the intrinsic value of the instructional materials to the end-user. For example, the constructs of learning interest, challenging, self-reported learning, and learned from others measure the end-user's perceived intrinsic achievements due to the experiment. Each construct was measured by multiple items and these items were adopted from the Hingorani et al., (1998) study. The constructs are defined below.

- **Learning interest** was used to evaluate how much the case study drew students' interest during and after the experimental sessions.
- **Challenging** was used to evaluate whether the case study successfully brought real life problems to the classroom, was helpful in learning difficult technical and management concepts, and was helpful in transferring theory to practice.
- **Self-reported learning** was used to evaluate whether the case study improved students' understanding of basic concepts and whether the students learned to identify central management and technical issues.
- **Learned from others** was used to evaluate whether the students learned from one another by valuing other students' point of view or by interrelating important topics and ideas.

- **Higher-Order Cognitive Skills** relate to the perception that an individual has acquired an adequate portfolio of skills to make a decision within a specified period of time. It implies an improved ability to identify, integrate, evaluate, and interrelate concepts within the case study, and hence make the appropriate decision in a given problem-solving situation.

Research questions were developed and analyzed using the Analysis of Variance (ANOVA) approach. The results reveal significant findings on the ability of multimedia instructional materials to improve higher-order cognitive skills of graduate students based on ethnicity. This leads to recommendations as to the need to develop new kinds of instructional materials in order to attract and retain minorities in engineering and other disciplines.