

## **A Gender Based Examination of Assurance of Learning in a Marketing Capstone Course**

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*This paper explores gender effects on assurance of learning scores from a global simulation (GLO-BUS) and ETS Business Major Field Test scores. Correlations between GLO-BUS scores and ETS scores are evaluated for significant relationships within genders. The sample comprised 95 undergraduate marketing majors in a mid-size public university. Results show males out performed females on ETS scores, and two GLO-BUS Assurance of Learning Scores: Leadership Skills, and Financial Analysis. For males, ETS scores were significantly correlated with GLO-BUS scores for Financial Analysis, Financial Management, Human Resource Management, and Marketing Management. No statistically significant correlations were found for females.*

### **INTRODUCTION**

There are at least four reasons for assurance of learning efforts in business colleges: 1) to give graduates a sustainable competitive advantage, 2) to give students skills and knowledge to enable them to be employed in marketing, 3) to enhance students' ability to apply conceptual knowledge, and 4) to satisfy accrediting bodies that business majors are learning content and reaching learning objectives. Ultimately, assurance of learning is a feedback mechanism to provide information about the process and improve the process. Hopefully, in the long run, students and business programs will benefit. Thus, assurance of learning is practiced in business schools all over the world. As the number of college bound high school students continues to decline, and private colleges provide a low cost online option, differentiating on the basis of high quality academic programs is necessary to attract new students. In addition, enhancing student success rates in finding employment after graduation is another opportunity for differentiation among colleges of business. Today, business faculty are more aware than ever of the need to provide students with experiences, knowledge and skills that may give them a sustainable competitive advantage in the job market (Hopkins, Raymond, and Carson, 2011). In a study of team simulations, McCreery (2003) found a team-based simulation improves student knowledge as well as the ability of students to apply that knowledge. Individual student learning was not affected by team performance or team dynamics. Finally, regional accrediting bodies such as the Southern Association of

Colleges and Schools (SACS) and the Association to Advance Collegiate Schools of Business (AACSB) require assurance of learning processes that support educational effectiveness.

Today business colleges are looking for ways to assure the efficacy of academic programs so that students learn relevant content and enhance their ability to apply their knowledge effectively. Technology has been at the forefront of educational tools that provide students with opportunities to apply their knowledge. One effort began in the United Kingdom where the University of Leeds pioneered the Ripple project (Race, 2010). The goal of this effort was to understand how internet and communications technologies (ICT) affect higher order learning by the whole student as young as preschool. In the United States, there has been a growing interest in this issue as evidenced by the application of behavior-based software to identify and develop individual student strengths as early as elementary school. For example, the University of Southern California Institute for Creative Technologies (2015) has extended this approach to many 'learning sciences' areas including avatars.

Other educational methodologies used to increase the efficacy of student learning are active and experiential learning. McCarthy and McCarthy (2006) showed that active and experiential learning have an impact on students' self-efficacy which leads them to continue learn new skills on their own. Active and experiential learning are extensions of Bandura's theory of human agency (1989, 1991), which says student beliefs about their own skills and abilities are motivational and are shaped by both initial success and overcoming failure experiences. These experiences enable the anticipation of future outcomes and to extrapolate future consequences from what was learned through past experiences, an active learning process. Finally, Nentil and Miller (2002), argue that simulation is a supportive technology that provides a context for active and experiential learning component. These technologies help to maximize student focus and motivation to learn.

In this paper, a widely available business simulation, GLO-BUS, is used to measure and assess assurance of learning in a marketing strategy capstone course. The simulation provides several measures of student performance related to the learning objectives of the course and the marketing major.

## **MATERIAL STUDIED**

### **Student Learning Outcomes**

An assurance of learning program typically measures student progress in achieving a set of learning objectives or outcomes. The research in this paper samples students who enrolled in the capstone, marketing strategy course in a mid-size public university. For this course, faculty defined the following set course goals and supporting student learning outcomes (SLO).

Course Goal: The goal of Marketing Strategy is to prepare the student for his or her 'best and highest' marketing position after graduation. Specific attention is given to the following goals:

- Synthesizing the student's evolving marketing skill set to aid decision-making in a dynamic global marketplace.
- Content from discipline-specific courses such as Consumer Analysis, Marketing Research, International Marketing, Retail Management, and Integrated Marketing Communications will be synthesized in an applied setting.

Student Learning Outcomes: At the completion of this course, the student should be able:

- To confront the ethical decisions facing marketing strategists in a complex operating environment.
- To engage in the process of devising and implementing Marketing Strategy in a dynamic global marketplace.
- To use strategic planning models to organize marketing decision-making.

- To distinguish segments of a marketplace and devise a targeted marketing effort to reach marketing goals.
- To compare and contrast the decision-making process of competitors in the marketplace.
- To illustrate marketing mix manipulation in a competitive marketplace (Product, Price, Promotion, Place, Partners, Packaging).

## **PURPOSE OF THIS RESEARCH ON GENDER DIFFERENCES**

The purpose of this research is to explore the effect of gender on the measurement of learning outcomes based on an active and experiential learning simulation technology. The literature reports gender differences in learning from a variety of researchers over the years. For example, Gneezy, Niederle, and Rustichini (2004) found women to under-perform in competitive mixed-gender environments. In another study of 1,300 undergraduate students, Terlecki and Newcombe (2005) observed a large advantage for males in experiences with computers and videogames. This so-called ‘Digital Divide’ between females and males held up even when SAT scores were taken into account. In a study of brain function using Functional Magnetic Resonance Imaging (fMRI), Speck, Ernst, Braun, Koch, Miller, and Chang (2000), found differences between men and women in brain lateralization and activation which may be due to differences in problem solving strategies or neurodevelopment.

In an extension of this brain lateralization approach to gender differences in performance on spatial abilities and computer-game preferences, Quaiser-Pohl, Geiser, and Lehmann (2006) categorized 256 males and 861 females according to their preferences and experience with computer games. The computer games encompassed 8 categories: adventure, action, sport, fantasy role-playing, logic, skill-training, simulations, and driving simulator. They found three classes of game players: Class 1 was comprised of non-players, Class 2 included action and simulation game players, and Class 3 was defined by logic and skill-training game players. Not surprisingly females were overrepresented in Class 1, non-players (89.1%). However, more females compared to males were found in the logic and skill-training Class 3 (82.9%). Finally, males were strongly overrepresented in Class 2 action and simulation games (81.7%). This study was designed to further examine the Class 2 finding using the GLO-BUS simulation in the capstone marketing strategy course.

### **Closing the Knowing-Doing Gap**

The goal of using a simulation in a marketing strategy capstone course is to close the Knowing – Doing Gap from university life to work life, and to incorporate Einstein’s comment, “Knowledge is experience, everything else is information,” into the course. Students arrive in class believing they are going to get the right answers from the professor, when they really need to learn how to ask the right questions. The core concepts for this approach are experiential/active learning, development of self-efficacy motivation, creating a virtuous learning cycle that repeats itself from one simulation round to the next. This virtuous learning cycle is: Build a Foundation – Provide Tools to Be Used – Require Application in a simulation that measures more than just score points.

This virtuous learning cycle must be incorporated into course design. The order of importance of elements of course design is: 1) self-directed learning, 2) creating something new, and 3) finishing high in merit competition where excellence has value. When students are involved in self-directed learning and creating something new, they start out making a lot of mistakes which causes negative emotional reactions. As Bandura’s (1989) approach suggests, part of the learning process is realizing it is not how you start, but how you finish in college and in life. Failure is only permanent if you want it to be. Those who are encouraged to, and ultimately persist, improve dramatically in performance from the beginning to the end of the simulation time period which typically involves 10 rounds of competition. The approach here involves experiential learning in a marketing strategy simulation, GLO-BUS, assurance of learning within the simulation, and ETS scores as a measure of individual student overall learning assurance.

Based on the above research findings, the hypothesis here is that males will out-perform females on assurance of learning measurements when using a competitive simulation learning technology due to differences in problem solving methods, differences in computer game experience and preferences, and due the effects of a competitive environment on performance.

## METHODS

### Marketing Strategy Learning Assurance Measures

The simulation (GLO-BUS) was used in the capstone marketing strategy course in the following semesters: Fall 2011, Spring 2012, Spring 2013, Fall 2014 and Spring 2015. GLO-BUS defined an experiential learning course component and produces a Learning Assurance Report (LAR) built into the simulation grade book. The LAR provides empirical data regarding the business skills and decision-making performance of students. The authors of the simulation contend that the LAR offers credible measures of learning and behavioral outcomes of students. In addition to face validity of the simulation structure and function, they cite on their website the following evidence: “Over the last 12 months, GLO-BUS has been used by 32,000 students in about 1500 classes/sections at nearly 300 college/university campus locations in 30 different countries,” (Thompson & Stappenbeck, 2015).

The LAR includes the measures in Table 1 below.

**TABLE 1**  
**GLOBUS LEARNING ASSURANCE REPORT DEFINITIONS**

Leadership Skills	Assessment of the individual's leadership and independent thinking skills.
Collaboration & Teamwork	Assessment of the individual's collaborative skills, teamwork, and ability to work well with others.
Financial Analysis	Assessment of the individual's skills in analyzing financial ratios and financial statements.
Financial Management	Assessment of the group's ability to apply financial management principles based on the company's ROE, credit rating, and stock price performances.
Operations Management	Assessment of the group's ability to manage production operations and control production costs based on the company's production cost competitiveness as measured by production costs per unit (adjusted for product quality and product line breadth).
Marketing Management	Assessment of the group's ability to effectively market the company's product and control marketing costs based on the company's market image and marketing costs per unit sold.
Human Resources Management	Assessment of the group's proficiency in workforce management and controlling labor costs based on work- force compensation, workforce productivity, and labor costs per unit sold.
Strategic Analysis & Planning	Assessment of the group's strategic planning and strategic thinking skills based on scores achieved on the 3-Year Strategic Plan exercise.
Corporate Social Responsibility	Assessment of group's awareness of and commitment to operating the company in a socially responsible manner and being a "model corporate citizen" based on the % of company revenues spent on the six corporate social responsibility initiatives.

These measures are based on student assignments in the simulation including quizzes, peer ratings, strategic plans generated, performance measured by return-on-assets, stock price, earnings-per-share, credit rating, and image relative to other students in the sample, those participating in the simulation at universities in the United States, as well as the World.

The GLO-BUS LAR is useful in two very important respects:

- It provides a clear overview of how well individual students and teams of students rank relative to students at other schools worldwide who have gone through the competition-based simulation exercise.
- Because the LAR offers highly credible evidence regarding the caliber of business understanding and decision-making effectiveness of students, it can be used to help assess the quality of an academic curriculum in business in meeting the curriculum's SLO's.

### **ETS Learning Assurance Measure**

In addition to the LAR measures from GLO-BUS, the ETS Business Major Field Test is often used as a measure of learning assurance. On the ETS website, [www.ets.org](http://www.ets.org), a description of the Business Major Field Test for Undergraduate Business Majors appears as follows:

“The ETS Major Field Test for the Bachelor's Degree in Business contains 120 multiple-choice questions designed to measure a student's subject knowledge and the ability to apply facts, concepts, theories and analytical methods. Some questions are grouped in sets and based on diagrams, charts and data tables. The questions represent a wide range of difficulty and cover depth and breadth in assessing students' achievement levels.”

The ETS content areas measured include:

- Accounting
- Economics
- Management
- Quantitative Business Analysis
- Information Systems
- Finance
- Marketing
- Legal and Social Environment
- International Issues

Typically, business schools and universities use this test in the last year of an undergraduate business program to assess the cumulative business knowledge as well as aggregate performance in each of the content areas. Our sample of students completed this test in their last year of their degree program.

## **RESULTS**

The LAR data from GLO-BUS and the ETS total scores were combined into a common data file for analysis including 95 marketing students (49 females, and 46 males). The means, standard deviations, and sample sizes for each LAR measure from GLO-BUS and the ETS total score appear in Table 2.

**TABLE 2**  
**DESCRIPTIVE STATISTICS**

Measure		N	Mean	Standard Deviation
ETS Total Score	Male	46	152.6	10.6
	Female	49	146.8	8.3
	Total	95	149.6	9.8
Leadership Skills	Male	46	63.2	25.8
	Female	49	46.0	27.5
	Total	95	54.3	27.9
Collaboration & Teamwork	Male	46	60.7	29.6
	Female	49	52.4	29.3
	Total	95	56.4	29.6
Financial Analysis	Male	46	52.8	33.3
	Female	49	36.9	27.2
	Total	95	44.6	31.2
Financial Management	Male	46	63.3	18.0
	Female	49	63.3	20.6
	Total	95	63.3	19.3
Operations Management	Male	46	46.3	24.8
	Female	49	53.1	26.4
	Total	95	49.8	25.7
Marketing Management	Male	46	56.6	22.3
	Female	49	54.0	23.3
	Total	95	55.3	22.7
Human Resources Management	Male	46	32.1	20.4
	Female	49	33.0	21.0
	Total	95	32.6	20.6
Strategic Analysis & Planning	Male	46	66.2	18.8
	Female	49	61.3	24.6
	Total	95	63.7	22.0
Corporate Social Responsibility	Male	46	59.5	27.5
	Female	49	59.6	23.7
	Total	95	59.5	25.5

Analysis of Variance comparing males and females was conducted on each measure. The results of significance testing appear in Table 3. Results indicate that males scored significantly higher on the ETS, Leadership Skills, and Financial Analysis measures.

**TABLE 3**  
**ANALYSIS OF VARIANCE OF GENDER ON MEASURES OF LEARNING OUTCOMES**

ANOVA						
		SS	df	MS	F	p
ETS Total Score	Between Groups	802.04	1	802.04	9.00	<b>.003***</b>
	Within Groups	8282.06	93	89.05		
	Total	9084.11	94			
Leadership Skills	Between Groups	7067.87	1	7067.87	9.92	<b>.002**</b>
	Within Groups	66245.35	93	712.32		
	Total	73313.22	94			
Collaboration & Teamwork	Between Groups	1637.62	1	1637.61	1.89	.172
	Within Groups	80543.37	93	866.06		
	Total	82180.99	94			
Financial Analysis	Between Groups	6002.07	1	6002.07	6.54	<b>.012*</b>
	Within Groups	85299.09	93	917.20		
	Total	91301.16	94			
Financial Management	Between Groups	.01	1	.01	.00	.997
	Within Groups	34940.88	93	375.701		
	Total	34940.88	94			
Operations Management	Between Groups	1083.23	1	1083.23	1.65	.202
	Within Groups	61030.56	93	656.24		
	Total	62113.79	94			
Marketing Management	Between Groups	158.79	1	158.79	.31	.581
	Within Groups	48257.15	93	518.89		
	Total	48415.94	94			
Human Resources Management	Between Groups	17.11	1	17.11	.04	.842
	Within Groups	39766.20	93	427.59		
	Total	39783.301	94			
Strategic Analysis & Planning	Between Groups	557.50	1	557.50	1.16	.285
	Within Groups	44811.38	93	481.84		
	Total	45368.88	94			
Corporate Social Responsibility	Between Groups	.13	1	.13	.00	.989
	Within Groups	61007.60	93	656.00		
	Total	61007.73	94			

\*p < .05, \*\* p < .01, \*\*\* p < .001

4.1 Sub-group correlation analysis

With the findings indicating there were several significant differences in the learning outcome scores with males scoring higher than females, correlation analysis between ETS scores and each of the LAR's was undertaken for each gender. Table 4 shows the results. For male students, four correlations were statistically significant. For female students, no correlations were statistically significant.

**TABLE 4**  
**SUB-GROUP CORRELATION COEFFICIENTS BETWEEN ETS**  
**SCORES AND EACH LAR OUTCOME**

Measure	Males	Females	Total
Leadership Skills	.04	.12	.16
Collaboration & Teamwork	-.03	.14	.09
Financial Analysis	<b>.32*</b>	-.02	<b>.25*</b>
Financial Management	<b>.35*</b>	-.13	.11
Operations Management	-.03	-.02	-.06
Marketing Management	<b>.47**</b>	-.15	.19
Human Resources Management	<b>.35*</b>	.20	<b>.26*</b>
Strategic Analysis & Planning	.27	.03	.17
Corporate Social Responsibility	.03	-.03	.01
n	46	49	95

p < .05 \*; p < .01 \*\*

## DISCUSSION

These results indicate differences between males and females for simulation players participating in a global simulation in marketing strategy. The three measures of ETS total score, Leadership Skills, and Financial Analysis showed significant differences between males and females with males showing higher mean scores. In addition, the sub-group correlation results show males with a significant positive correlation of Marketing Management, Financial Management, Human Resource Management, and Financial Analysis with ETS total score for males in the global simulation environment. There were no significant correlations of any of the LAR measures with ETS total score for females. This pattern of results suggests there are differences between males and females in active learning outcomes in a simulation environment and that assurance of learning as measured by ETS total score is not related to female outcomes in that environment.

The correlation between ETS total score and the Learning Assurance Report Marketing Management variable for males here suggests this approach to assurance of learning in marketing may improve external validity for male but not necessarily female students. If simulations like the one employed here are good for student learning, one would hope they would be equally valid for males and females. This gender difference begs the question of how we can get males and females to benefit from the active learning approach inherent in simulations. Future research may uncover other variables involved in differences between male and female students, or it may reveal how the learning environment in simulations can be modified to benefit both males and females.

## CONCLUSION

The use of simulation technology for learning and measuring active learning in a global context may be viable as an alternative to case analysis, multiple choice, or essay exams to measure and assess learning in marketing strategy for all students. In their attempt to develop a more effective College specific assurance of learning approach, Baker et al. (2007) relied on the approach of Prus and Johnson (1994) for including a simulation as a key component. They describe simulations as competency-based rather than multiple choice tests as a gauge of student application of knowledge, skills and aptitudes. Prus and Johnson also point out that simulations are useful with teams and may help improve external validity. Hopefully future research on the use of simulations in capstone courses may uncover how to improve active learning by both male and female students that is related to the skills, knowledge and aptitudes they need after graduation.

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