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# **AN EXAMINATION OF MINORITY STUDENTS' PERCEPTIONS OF BLACKBOARD PRE AND POST THE HURRICANE KATRINA**

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## **ABSTRACT**

*In recent years, there has been a rapid increase in use of what we term Web Enhanced Instruction (WEI) by colleges and universities. Recent work by Landry (2003) and Landry et al (2006) has reported the development and an initial examination of a modification of the Davis (1989) Technology Acceptance Model (TAM) to measure students' perceptions of various "elements" of a specific WEI, the Blackboard. In this research, we extend the Landry (2003) and Landry et al (2006) investigation to a minority university located in New Orleans. Our emphasis is upon examining linkages in the TAM for samples pre and post the Hurricane Katrina disaster.*

## **INTRODUCTION**

Recent years have seen a major infusion of technology into the university classroom, especially as computer prices have dropped dramatically and their use has become much more universal among faculty and students than has been the case in the past (Del Favero & Hinson, 2007; Inoue, 2000). The use of the technology itself ranges from conducting classes completely online to using Web Enhanced Instruction (WEI) to supplement the traditional on-campus lecture with course content which can be accessed online (Landry, Griffeth & Hartman, 2006). Surprisingly, however, given the rapid adoption of new technology, there has been little systematic work to evaluate its effectiveness in areas such as permitting students to move toward being active, rather than passive learners (Dumort, 2000; Helford & Lei, 2001). Recent work by Landry (2003) and Landry et al (2006) has reported the development and an initial examination of a modification of the Davis (1989) Technology Acceptance Model (TAM) to measure students' perceptions of various "elements" of a specific WEI, the Blackboard. Elements are features such as discussion boards or e-mail. In this research, we extend the Landry et al investigation to a minority university in New Orleans, with emphasis on considering how students responded to the elements before and after the disaster situation brought about by Hurricanes Katrina and Rita.

## **TECHNOLOGY ACCEPTANCE MODEL (TAM)**

The Landry (2003) and Landry et al (2006) research was based upon the Davis (1989) TAM, which, in turn, had its theoretical basis in the theory of reasoned action (Fishbein & Ajzen, 1975) which held that behavior is a function of attitudes toward and perceptions about the behavior. Davis' (1989) research showed that the behavior – computer usage/perceived computer usage – was a function of perceived Usefulness or "the degree to which a person

believes that using a particular system would enhance his or her job performance,” and perceived Ease of Use or “the degree to which using a particular technology would be free from effort.” The instrument (Landry, 2003; Landry et al, 2006) was based upon the theory by Segars and Grover (1993) which divided Usefulness into Effectiveness and Importance, but this research did not examine Ease of Use. Landry (2003) and Landry et al (2006) modified Davis’ (1989) TAM, incorporating Ease of Use as well as the Segars et al breakout of Usefulness into Effectiveness and Importance. Their results found support for all of the linkages in the TAM (Figure 1). Thus, they find that there are linkages between Ease of Use and Usefulness (Effectiveness and Importance) and that those students who found the Blackboard Easy to Use also found it Useful. Moreover, both Ease of Use and Usefulness are related to Usage, and students who found Blackboard Easy to Use and Useful would report higher Usage. Note, however, that while the reported correlations are significant ( $p < .01$ ), they are higher for Usefulness (in the .7 range) than for ease of use (.3 and below), a finding which may reflect discussion in the literature that Usefulness is more important than Ease of Use (Landry 2003). Moreover, the findings held only for what Landry 2003 and Landry et al (2006) termed Course Content elements, including Course Documents, Lectures, Student Tools, Announcements, and Quizzes. There was no relationship for Course Support elements, including Discussion Boards, External Web Sites, Faculty Information and E-mail.

### **THE DIGITAL DIVIDE**

Should we expect results similar to those reported by Landry et al (2006) when study is extended to a historically minority college setting? Several recent reports suggest that what is being called the *digital divide* between minorities and especially African Americans and Caucasians may impact the ability of Historically Black Colleges and Universities (HBCU) to deliver technology such as WEI in an effective manner. Several recent reports require consideration.

Snipes et al (2006) found that the African American community lags significantly behind Whites in computer and Internet usage and that the resulting digital divide may impact delivery which is dependent on these technologies. Important reviews by Carnevale (2003) and Hamilton (2001) echo these findings. See also similar findings by Tiene (2002), Hansen (2001), Roach (2000, 2001), and Stumpf, McCrimon & Davis (2005). Lack of funding for the technology itself in HBCU’s is cited by Dervarics (2003), raising the possibility that the technology may, at best, not be Easy to Use. Other authors point out that the HBCU faculty themselves may not be well prepared to use WEI (Del Favero & Hinson, 2007; Stumpf et al, 2005), leading to questions about the Usefulness and Ease of Use of their educational “product.”

### **HURRICANES KATRINA AND RITA AND THEIR IMPACTS ON EDUCATION IN NEW ORLEANS**

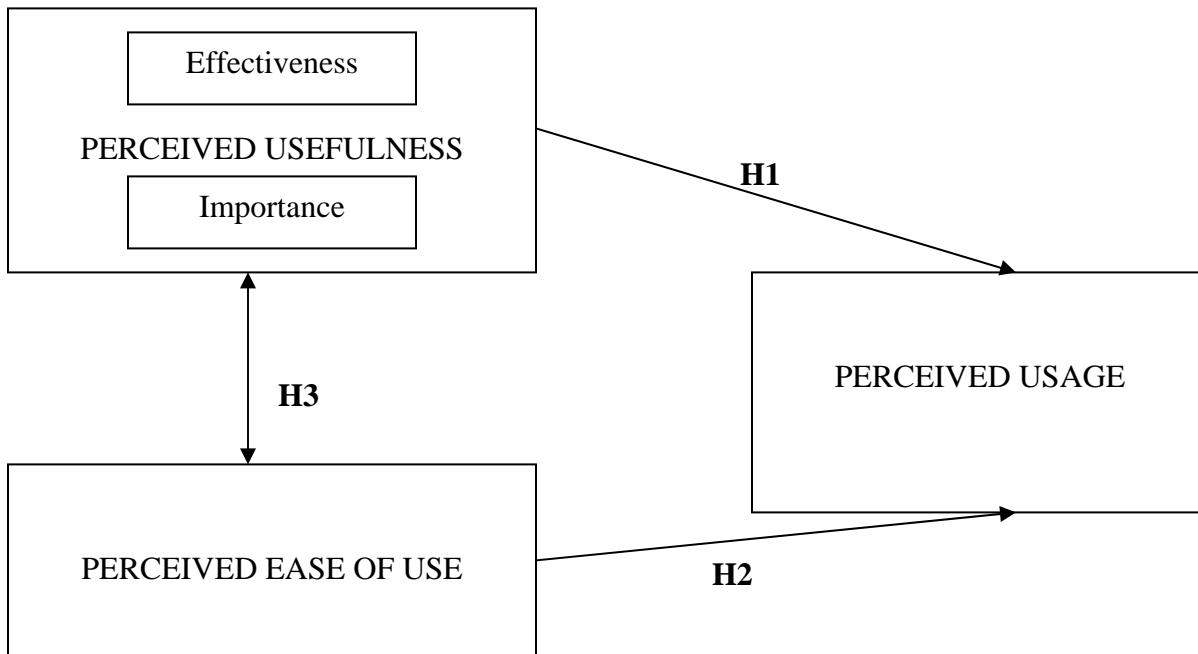
Southern University at New Orleans, the setting of this study, is located near the lakefront of Lake Pontchartrain at one of the key areas where the levees breached during Hurricane Katrina. Several hundred students were enrolled in the Business School. The students were primarily non-traditional, with an average age of over 27. Most worked full or part time and

many had families. Importantly for this study, most students and faculty preferred to live on the lakefront to be near to the University, and, as a result, when the flooding occurred, a large percentage of both students and faculty sustained heavy losses. Most were evacuated. Moreover, the University itself was flooded and much of its infrastructure was destroyed.

In the weeks immediately following the disaster, a skeleton crew of University officials gathered in temporary office space, and began planning how the University should respond to the disaster. The result was a decision to open as soon as possible and to emphasize online learning. Note that the emphasis was upon *responding* in a prompt and flexible manner to the events. What was critical was the ability to react quickly to the environment in ways which paralleled the ideas of classical contingency theory (e.g., Duncan, 1979; Morse & Lorsch, 1970; Ashkensas, Ulrich, Jick & Kerr, 1998). What was *not* in evidence were notions such as *contingency planning* or *active readiness*, from the crisis literature, emphasizing preparation for disaster *before* it occurs (see especially Connell & Drennan, 2006). Recently, and drawing upon recent crises including Hurricane Katrina, Mitroff, Diamond and Alpaslan (2006) have examined planning for crises in the college and university setting and have recommended that crisis management teams be formed *prior* to disaster situations and that they develop plans and establish contingencies prior to the disaster situation. Very little of this kind of thinking was in place in the New Orleans setting, a situation consistent with much of the Mitroff et al findings. In this research, as noted, we consider impacts upon the linkages in the TAM for students who were surveyed pre-Katrina and compare them to findings for students who were surveyed after the University re-opened, with greatly enhanced emphasis on WEI, post Katrina.

In earlier research, however, the present authors found no evidence for the digital divide in a post Hurricane Katrina sample and suggested that what may have happened is that the extreme need for use of WEI post Katrina may have “jump-started” usage in New Orleans’ HBCU. If this is the case, an examination of the linkages in the model pre and post Katrina should reveal differences, with the pre-Katrina sample reporting much lower levels. In this research, we investigate this possibility. Figure 1 shows the linkages we expect in the TAM and relates linkages to the following research questions.

**FIGURE 1: Research Model and Hypotheses:**



Hypothesis 1: There will be a relationship between students' perceptions of *Usefulness* (*Effectiveness* and *Importance*) and Usage of Web Enhanced Instruction (WEI) technology.

Hypothesis 2: There will be a relationship between students' perceptions of *Ease of Use* and Usage of Web Enhanced Instruction (WEI) technology.

Hypothesis 3: There will be a relationship between students' perception of *Usefulness* (*Effectiveness* and *Importance*) and *Ease of Use* of Web Enhanced Instruction (WEI) technology.

Hypothesis 4: The students in the Historically Black Colleges and Universities will report the same levels of *Usefulness* (*Effectiveness* and *Importance*), *Usage*, and *Ease of Use* of Web Enhanced Instruction (WEI) technology before and after Hurricane Katrina.

## METHOD

### Subjects

Subjects in this sample are approximately 135 students from a historically black university in the Deep South with 70 of them before Hurricane Katrina and 65 after the hurricane. The students were roughly 40% male Pre-Katrina (Pre-K) and 32% male Post-Katrina

(Post-K). The sample was comprised of roughly 11% freshmen and sophomores, 12.5% juniors, 47% seniors, and 30% graduate students before Katrina and 1.6% freshmen and sophomores, 19% juniors, 78% seniors, and 1.6% graduate students after Katrina. The findings reflect what has developed as a key challenge to colleges and universities in the hurricane devastated area – how to recruit new students and retain current students. The students were also split into two categories: business majors versus non-business majors. There are approximately 50% business majors before Katrina and 88% business majors after Katrina. The age range of the students was split into four categories: 18 to 20 (3% Pre-K vs. 1.5% Post-K), 21 to 25 (39% Pre-K vs. 50% Post-K), 26 to 30 (14% Pre-K vs. 26% Post-K), and 30 years old and older (44% Pre-K vs. 23% Post-K).

## Data

In this study, the instrument used is based on the modified TAM reported by Landry et al (2006). The resulting *Blackboard Student Feedback Survey* was a sixty-two-question survey that was administered with a Scantron answer sheet.

## Perceived Usefulness

Two elements were used to measure perceived *Usefulness: Effectiveness* and *Importance*. See Tables 1 and 2 for specific items. Each element, in turn, was measured by ten sub-elements of the Blackboard features. The ten sub-elements are Announcements, Syllabus, Lecture Slides/Course Documents, Quizzes, Exam Review Sheets, Communication-Send Email to Other, Student Tools & Grades, Faculty/Staff Information, Receive Email from Instructor, and Discussion Board. A six-point Likert scale was used with a range of low (rating of 1), medium (rating of 3), high (rating of 5), and N/A (rating of 6) to determine how the feature is rated.

We conducted a factor analysis to identify the underlying dimensionality. Consistent with Landry (2003) and Landry et al (2006), two factors emerged from the *Effectiveness* items. The first factor was termed “Effectiveness-Course Content” which includes Announcements, Syllabus, Course Documents, Quizzes, Exam Review Sheets, and Student Tools. The second factor was named “Effectiveness-Course Support” which is composed of Communication, Faculty Information, Received Email from Instructor, and Discussion Board. Table 1 provides the items and shows the results of our factor analysis.

The second factor analysis was conducted on the *Importance* items. Again, consistent with Landry (2003) and Landry et al (2006), two factors emerged: one was labeled “Importance-Course Content” and the other was named “Importance-Course Support”. The “Importance-Course Content” factor is consisted of Announcements, Syllabus, Course Documents, Quizzes, and Exam Review Sheets. The “Importance-Course Support” factor includes Communication, Student Tools, Faculty Information, Received Email from Instructor, and Discussion Board. Table 2 provides the items and shows the results of our factor analysis.

**TABLE 1: Factor Analysis on Perceived “Usefulness” – Effectiveness**

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
Effectiveness of Announcements	.524	.532
Effectiveness of Syllabus	.510	.576
Effectiveness of Lectures Slides/Course Documents	.402	.589
Effectiveness of Quizzes	.108	.702
Effectiveness of Exam Review Sheets	5.538E-02	.818
Effectiveness of Communication - Send Email to Other	.743	.330
Effectiveness of Student Tools & Grades	.425	.565
Effectiveness of Faculty/Staff Information	.773	.316
Effectiveness of Receive Email from Instructor	.874	.117
Effectiveness of Discussion Board	.755	.112

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**TABLE 2: Factor Analysis on Perceived “Usefulness” – Importance**

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
Importance of Announcements	.697	.101
Importance of Syllabus	.705	.277
Importance of Lectures Slides/Course Documents	.767	.242
Importance of Quizzes	.742	.162
Importance of Exam Review Sheets	.744	.161
Importance of Communication - Send Email to Other	5.742E-02	.872
Importance of Student Tools & Grades	.552	.559
Importance of Faculty/Staff Information	.247	.731
Importance of Receive Email from Instructor	.183	.742
Importance of Discussion Board	.267	.715

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

***Perceived Usage***

Perceived *Usage* was measured by ten elements; each element represents the Blackboard feature mentioned previously. A six-point Likert scale was used again with a range of low,

medium, high, and N/A if the feature is not used. The third factor analysis produced a single-factor solution, which was named “Usage”.

***Perceived Ease of Use***

Perceived Ease of Use was measured by a single question – Blackboard is user friendly and easy to use. The question was measured by a six-item Likert scale for strongly disagree, disagree, neutral, agree, strongly agree, or no opinion. The rating “1” represents strongly disagree, “2” represents disagree, and so forth. The average Perceived Ease of Use is 4.61 out of 5 with 25% of the students reporting a rating of 4 and 69% reporting a rating of 5 (Table 3) before Hurricane Katrina. The average Perceived Ease of Use is 4.35 out of 5 with 31% of the students reporting a rating of 4 and 55% reporting a rating of 5 (Table 3) after Hurricane Katrina.

**TABLE 3: Questions for Perceived Ease of Use**

**Pre-Katrina**

**Blackboard is user friendly and easy to use<sup>a</sup>.**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2	1	1.4	1.5	1.5
3	3	4.3	4.5	6.0
4	17	24.3	25.4	31.3
5	46	65.7	68.7	100.0
Total	67	95.7	100.0	
Missing System	3	4.3		
Total	70	100.0		

a. Pre and Post Katrina = Pre-Katrina

**Descriptive Statistics<sup>a</sup>**

	N	Minimum	Maximum	Mean	Std. Deviation
Blackboard is user friendly and easy to use.	67	2	5	4.61	.65
Valid N (listwise)	67				

a. Pre and Post Katrina = Pre-Katrina



## Post-Katrina

### Blackboard is user friendly and easy to use.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	1	1.5	1.5	1.5
2	2	3.1	3.1	4.6
3	6	9.2	9.2	13.8
4	20	30.8	30.8	44.6
5	36	55.4	55.4	100.0
Total	65	100.0	100.0	

a. Pre and Post Katrina = Post-Katrina

### Descriptive Statistics<sup>a</sup>

	N	Minimum	Maximum	Mean	Std. Deviation
Blackboard is user friendly and easy to use.	65	1	5	4.35	.89
Valid N (listwise)	65				

a. Pre and Post Katrina = Post-Katrina

## RESULTS

Our first hypothesis considered the relationship between the students' perception of Usefulness (Effectiveness and Importance) and Usage of Web Enhanced Instruction (WEI) technology. Table 4 provides the correlation results before and after Hurricane Katrina. The results find sufficient evidence to support the relationship between *Usage* and *Effectiveness-Course Content* and *Importance-Course Support* before Katrina and significant relationship between *Usage* and *Effectiveness-Course Content*, *Effectiveness-Course Support*, and *Importance-Course Support* after Katrina. All coefficients are positive which implies that as students perceive higher levels of course content and course support effectiveness and importance of course support, they report higher levels of usage of web enhanced instruction technology. Interestingly, after Hurricane Katrina, a new relationship emerges between *Usage* and *Effective-Course Support*. In contrast to the Landry (2003) and the Landry et al (2006) findings, which showed no relationships to the course support items, these results did show some relationships to course support items, as well as to course content.

Our second hypothesis examined the relationship between students' perceptions of Ease of Use and Usage. Table 5 provides the results of our correlation analysis. The relationship between *Usage* and "Blackboard is user friendly and easy to use." is significant at the 0.000 level after Hurricane Katrina but not before Hurricane Katrina. The coefficient further indicates a positive relationship between usage of Blackboard and perceived Ease of Use of Blackboard.

**TABLE 4: Pearson's Correlation Matrix Showing Correlation Between Perceived Usefulness (Effectiveness and Importance) and Perceived Usage of Web Enhanced Instruction (WEI) Technology**

**Pre-Katrina**

**Correlations<sup>a</sup>**

		Usage	Effectiveness - Course Content	Effectiveness - Course Support	Importance - Course Content	Importance - Course Support
Usage	Pearson Correlation	1.000	.615**	.339**	.071	.422**
	Sig. (2-tailed)	.	.000	.009	.604	.001
	N	58	58	58	56	56
Effectiveness - Course Content	Pearson Correlation	.615**	1.000	-.179	-.245	.567**
	Sig. (2-tailed)	.000	.	.171	.064	.000
	N	58	60	60	58	58
Effectiveness - Course Support	Pearson Correlation	.339**	-.179	1.000	.400**	-.146
	Sig. (2-tailed)	.009	.171	.	.002	.275
	N	58	60	60	58	58
Importance - Course Content	Pearson Correlation	.071	-.245	.400**	1.000	-.189
	Sig. (2-tailed)	.604	.064	.002	.	.148
	N	56	58	58	60	60
Importance - Course Support	Pearson Correlation	.422**	.567**	-.146	-.189	1.000
	Sig. (2-tailed)	.001	.000	.275	.148	.
	N	56	58	58	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

a. Pre and Post Katrina = Post-Katrina

**Post-Katrina**

**Correlations<sup>a</sup>**

		Usage	Effectiveness - Course Content	Effectiveness - Course Support	Importance - Course Content	Importance - Course Support
Usage	Pearson Correlation	1.000	.615**	.339**	.071	.422**
	Sig. (2-tailed)	.	.000	.009	.604	.001
	N	58	58	58	56	56
Effectiveness - Course Content	Pearson Correlation	.615**	1.000	-.179	-.245	.567**
	Sig. (2-tailed)	.000	.	.171	.064	.000
	N	58	60	60	58	58
Effectiveness - Course Support	Pearson Correlation	.339**	-.179	1.000	.400**	-.146
	Sig. (2-tailed)	.009	.171	.	.002	.275
	N	58	60	60	58	58
Importance - Course Content	Pearson Correlation	.071	-.245	.400**	1.000	-.189
	Sig. (2-tailed)	.604	.064	.002	.	.148
	N	56	58	58	60	60
Importance - Course Support	Pearson Correlation	.422**	.567**	-.146	-.189	1.000
	Sig. (2-tailed)	.001	.000	.275	.148	.
	N	56	58	58	60	60

\*\* . Correlation is significant at the 0.01 level (2-tailed).

a. Pre and Post Katrina = Post-Katrina

**TABLE 5: Pearson’s Correlation Matrix Showing Correlation Between Perceived Ease of Use and Perceived Usage of Web Enhanced Instruction (WEI) Technology**

**Pre-Katrina**

**Correlations<sup>a</sup>**

		Usage	Blackboard is user friendly and easy to use.
Usage	Pearson Correlation	1.000	.237
	Sig. (2-tailed)	.	.112
	N	47	46
Blackboard is user friendly and easy to use.	Pearson Correlation	.237	1.000
	Sig. (2-tailed)	.112	.
	N	46	67

a. Pre and Post Katrina = Pre-Katrina

## Post-Katrina

### Correlations<sup>a</sup>

		Usage	Blackboard is user friendly and easy to use.
Usage	Pearson Correlation	1.000	.550**
	Sig. (2-tailed)	.	.000
	N	58	58
Blackboard is user friendly and easy to use.	Pearson Correlation	.550**	1.000
	Sig. (2-tailed)	.000	.
	N	58	65

\*\* . Correlation is significant at the 0.01 level (2-tailed).

a. Pre and Post Katrina = Post-Katrina

Hypothesis three suggested that there would be a relationship between students' perceptions of *Usefulness* (*Effectiveness-Course Content*, *Effectiveness-Course Support*, and *Importance-Course Content*, and *Importance-Course Support*) and *Ease of Use* of Web Enhanced Instruction (WEI) technology. The results in Table 6 show significant relationships among all four pairs of variables before and after Hurricane Katrina with the exception of *Effectiveness-Course Content* which is not significant after the hurricane. This finding suggests strong support for our hypothesis, and, again, is in contrast to the Landry (2003) and the Landry et al (2006) findings which found support for only the course content items.

Hypothesis four asked if the Blackboard elements are perceived differently by students from one of the Historically Black Colleges and Universities in New Orleans before and after Hurricane Katrina. MANOVA (Multivariate Analysis of Variance) was used and the results are shown in Table 7. No significant results are found, which indicates that there are no significant perceptual differences on *Usage*, *Usefulness* (*Effectiveness-Course Content*, *Effectiveness-Course Support*, and *Importance-Course Content*, and *Importance-Course Support*) and *Ease of Use* of Web Enhanced Instruction (WEI) technology before and after Hurricane Katrina.

**TABLE 6: Pearson's Correlation Matrix Showing Correlation Between Perceived Usefulness (Effectiveness and Importance) and Perceived Ease of Use of Web Enhanced Instruction (WEI) Technology**

**Pre-Katrina**

**Correlations<sup>a</sup>**

		Blackboard is user friendly and easy to use.	Effectiveness - Course Content	Effectiveness - Course Support	Importance - Course Content	Importance - Course Support
Blackboard is user friendly and easy to use.	Pearson Correlation	1.000	.417**	.499**	.539**	.314*
	Sig. (2-tailed)	.	.004	.000	.000	.021
	N	67	46	46	54	54
Effectiveness - Course Content	Pearson Correlation	.417**	1.000	.233	.389**	.453**
	Sig. (2-tailed)	.004	.	.114	.008	.002
	N	46	47	47	45	45
Effectiveness - Course Support	Pearson Correlation	.499**	.233	1.000	.560**	.320*
	Sig. (2-tailed)	.000	.114	.	.000	.032
	N	46	47	47	45	45
Importance - Course Content	Pearson Correlation	.539**	.389**	.560**	1.000	.271*
	Sig. (2-tailed)	.000	.008	.000	.	.045
	N	54	45	45	55	55
Importance - Course Support	Pearson Correlation	.314*	.453**	.320*	.271*	1.000
	Sig. (2-tailed)	.021	.002	.032	.045	.
	N	54	45	45	55	55

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

a. Pre and Post Katrina = Pre-Katrina

## Post-Katrina

### Correlations<sup>a</sup>

		Blackboard is user friendly and easy to use.	Effectiveness - Course Content	Effectiveness - Course Support	Importance - Course Content	Importance - Course Support
Blackboard is user friendly and easy to use.	Pearson Correlation	1.000	.311*	.212	.293*	.368**
	Sig. (2-tailed)	.	.016	.104	.023	.004
	N	65	60	60	60	60
Effectiveness - Course Content	Pearson Correlation	.311*	1.000	-.179	-.245	.567**
	Sig. (2-tailed)	.016	.	.171	.064	.000
	N	60	60	60	58	58
Effectiveness - Course Support	Pearson Correlation	.212	-.179	1.000	.400**	-.146
	Sig. (2-tailed)	.104	.171	.	.002	.275
	N	60	60	60	58	58
Importance - Course Content	Pearson Correlation	.293*	-.245	.400**	1.000	-.189
	Sig. (2-tailed)	.023	.064	.002	.	.148
	N	60	58	58	60	60
Importance - Course Support	Pearson Correlation	.368**	.567**	-.146	-.189	1.000
	Sig. (2-tailed)	.004	.000	.275	.148	.
	N	60	58	58	60	60

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

a. Pre and Post Katrina = Post-Katrina

**TABLE 7: A Comparison of Perceived *Usefulness (Effectiveness and Importance)*, and Perceived *Usage of Web Enhanced Instruction (WEI) Technology Before and After Hurricane Katrina***

**Multivariate Tests<sup>b</sup>**

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.976	625.807 <sup>a</sup>	6.000	91.000	.000
	Wilks' Lambda	.024	625.807 <sup>a</sup>	6.000	91.000	.000
	Hotelling's Trace	41.262	625.807 <sup>a</sup>	6.000	91.000	.000
	Roy's Largest Root	41.262	625.807 <sup>a</sup>	6.000	91.000	.000
KATRINA	Pillai's Trace	.049	.779 <sup>a</sup>	6.000	91.000	.588
	Wilks' Lambda	.951	.779 <sup>a</sup>	6.000	91.000	.588
	Hotelling's Trace	.051	.779 <sup>a</sup>	6.000	91.000	.588
	Roy's Largest Root	.051	.779 <sup>a</sup>	6.000	91.000	.588

a. Exact statistic

b. Design: Intercept+KATRINA

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Usage	.391 <sup>a</sup>	1	.391	.441	.508
	Effectiveness - Course Content	.509 <sup>b</sup>	1	.509	.489	.486
	Effectiveness - Course Support	1.993E-02 <sup>c</sup>	1	1.993E-02	.021	.884
	Importance - Course Content	2.652 <sup>d</sup>	1	2.652	2.722	.102
	Importance - Course Support	1.482 <sup>e</sup>	1	1.482	1.454	.231
	Blackboard is user friendly and easy to use.	.167 <sup>f</sup>	1	.167	.229	.633
Intercept	Usage	.271	1	.271	.306	.581
	Effectiveness - Course Content	.199	1	.199	.191	.663
	Effectiveness - Course Support	.507	1	.507	.543	.463
	Importance - Course Content	2.053E-02	1	2.053E-02	.021	.885
	Importance - Course Support	8.314E-04	1	8.314E-04	.001	.977
	Blackboard is user friendly and easy to use.	1887.840	1	1887.840	2595.217	.000
KATRINA	Usage	.391	1	.391	.441	.508
	Effectiveness - Course Content	.509	1	.509	.489	.486
	Effectiveness - Course Support	1.993E-02	1	1.993E-02	.021	.884
	Importance - Course Content	2.652	1	2.652	2.722	.102
	Importance - Course Support	1.482	1	1.482	1.454	.231
	Blackboard is user friendly and easy to use.	.167	1	.167	.229	.633
Error	Usage	84.980	96	.885		
	Effectiveness - Course Content	99.965	96	1.041		
	Effectiveness - Course Support	89.742	96	.935		
	Importance - Course Content	93.517	96	.974		
	Importance - Course Support	97.800	96	1.019		
	Blackboard is user friendly and easy to use.	69.833	96	.727		
Total	Usage	85.560	98			
	Effectiveness - Course Content	100.595	98			
	Effectiveness - Course Support	90.310	98			
	Importance - Course Content	96.177	98			
	Importance - Course Support	99.323	98			
	Blackboard is user friendly and easy to use.	1992.000	98			
Corrected Total	Usage	85.371	97			
	Effectiveness - Course Content	100.474	97			
	Effectiveness - Course Support	89.762	97			
	Importance - Course Content	96.169	97			
	Importance - Course Support	99.281	97			
	Blackboard is user friendly and easy to use.	70.000	97			

a. R Squared = .005 (Adjusted R Squared = -.006)

b. R Squared = .005 (Adjusted R Squared = -.005)

c. R Squared = .000 (Adjusted R Squared = -.010)

d. R Squared = .028 (Adjusted R Squared = .017)

e. R Squared = .015 (Adjusted R Squared = .005)

f. R Squared = .002 (Adjusted R Squared = -.008)



## DISCUSSION AND CONCLUSIONS

In this study, we have examined whether students from a historically black college would show reactions to Blackboard elements which were consistent with earlier findings by Landry (2003) and Landry et al (2006), and whether the relationships in the model would differ when we compare a sample of students who responded to the TAM survey pre-Hurricane Katrina to those surveyed after the disaster. Overall, our results show both a general pattern of consistency, in which linkages are found for most of the modified TAM variables (Figure 1). Based upon our earlier research, we had expected that, if a sudden thrust into WEI post-storm had served to accelerate minority students across the digital divide, we would see higher ratings of *Usefulness* and patterns of linkages which were closer to the TAM model (Figure 1) for the post-storm sample. However, our findings suggest that a more complex set of factors may be operating. In contrast to our discussion of the *digital divide*, our findings in this study indicate that the students from the historically black college saw *more* TAM linkages - for course support as well as course content (see Tables 4 & 5). Further differences were apparent in the pre- and post-storm environments. When considering the relationships between *Usage* and *Effectiveness*, course support items were not significantly related to *Usage* pre-storm, but they did show significant relationships after the disaster. An examination of the relationships between *Usage* and *Ease of Use* suggests that there were no relationships pre-storm but that the relationships were significant and positive post-storm. Notably, perceived *Ease of Use* received higher ratings pre-storm than post-storm.

Why were the changes occurring? One possible set of reasons was mentioned briefly in our discussion of demographics. The demographic breakdowns in the university had shifted in important ways when pre-storm demographics are compared to post-storm. There are many more seniors, fewer entering freshmen and graduate students, more business students, and more students in the 21-25 age range. What may be occurring is a shift which could be important to universities planning for disaster recovery (see especially Connell & Drennan, 2006), in that the post-Katrina student body consists of more – and perhaps more traditional - students trying to finish their coursework and those involved in the more immediate job-related “payoff” of a business degree, with many more graduating seniors and fewer undergraduates, freshmen, and graduate students. Obviously, if this is the case, finding a way to attract a new body of these students will represent a major challenge for the university in future years. From the perspective of this paper, it may be that the post-Katrina students have somewhat different needs and expectations of WEI than those who preceded them. Especially, note that this group may feel the need for more course support, especially in an ability to use features such as e-mail, and may feel that the system is harder to use than the more heavily-represented freshmen and graduate students in the pre-storm environment.

Moreover, the environment itself may have changed. Anecdotal discussion suggests that, post-Katrina, there was the need to offer an extremely high level of WEI to support the classroom in a situation where students and instructors alike were struggling simply to get to class, to find needed course materials, and to communicate in a situation where even such factors as telephone service between faculty and students are not always regularly available. Perhaps what we are seeing in this situation is an environment where faculty and students alike at the

historically black college have turned to some aspects of WEI such as course support and there has been a heightened recognition of its importance.

In this study, we have reported results replicating earlier work by Landry (2003) and Landry et al (2006) in a historically black college. Our findings indicate overall support for the TAM linkages (Figure 1) found by Landry (2003) and Landry et al (2006). However, our overall findings indicate more relationships, especially to course support - for the historically black college, results which may be inconsistent with the digital divide discussed previously. We have speculated that the pre- vs. post-Katrina environment may have influenced student perceptions but additional study may be needed to tease out the relationships. Taken as a whole, our results suggest, on a potentially positive note, that it is entirely possible to overcome the digital divide, but it is our hope that less drastic means than a hurricane can be employed.

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