

## Journal Article Critique

Mark Rash | [markrash@vt.edu](mailto:markrash@vt.edu) | July 17, 2010

Wu, J., Tennyson, R., & Hsia, T. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education*, 55(1), 155-164.  
doi:10.1016/j.compedu.2009.12.012.

### Background / Problem Addressed by the Study

With increasing theoretical and practical support for learner-centric learning, e-learning is often used due to its enhanced communication, multimedia, and interaction capabilities (Wu, Tennyson, & Hsia, 2010, p.155). However, there are a number of drawbacks to e-learning, such as lack of contact with peers, limited social interaction, costs, and resources (Wu, Tennyson, & Hsia, 2010, p.155). Additionally, learners may feel isolated, confused, and frustrated, or disinterested in the subject matter (Wu, Tennyson, & Hsia, 2010, p.155). Student satisfaction and effectiveness for e-learning has also been called into question (Wu, Tennyson, & Hsia, 2010, p.155). Therefore, blended e-learning system, or BELS, has been given as a promising alternative approach to learning with several advantages, including instructional richness, social interaction, cost effectiveness, ease of maintenance, and knowledge content (Wu, Tennyson, & Hsia, 2010, p.155). Yet, learner satisfaction still seems to be an issue and prior research indicates the focus on BELS should be on both the human and technology factors (Wu, Tennyson, & Hsia, 2010, pp.155-156). The main problem addressed by the study is clearly identified as insufficient learner satisfaction in a BELS environment (Wu, Tennyson, & Hsia, 2010, p.156).

## **Purpose of the Study**

The purpose of the study is clearly stated as attempting to provide management insight into approaches for developing effective strategies that allow administrators and instructors in educational institutions to generate new instructional benefits and value for learners (Wu, Tennyson, & Hsia, 2010, p.156). The intent is to use the results of the study to identify crucial factors for designing and implementing successful BELSs that enhance learner satisfaction (Wu, Tennyson, & Hsia, 2010, p.155).

## **Hypotheses**

The researchers make eight directional hypotheses, as outlined below (Wu, Tennyson, & Hsia, 2010, pp.157-158):

- H1: A higher level of performance expectations for BELS use will positively associate with a higher level of learning satisfaction with BELS.
- H2: A higher level of individual's computer self-efficacy will positively associate with a higher level of performance expectations for BELS use.
- H3: A higher level of system functionality of BELS will positively associate with a higher level of performance expectations for BELS use.
- H4: A higher level of content features in BELS will positively associate with a higher level of performance expectations for BELS use.
- H5: A higher level of system functionality in BELS will positively associate with a higher level of content features in BELS.
- H6: A higher level of interaction will positively associate with a higher level of performance expectations for BELS use.

- H7: A higher level of interaction will positively associate with a higher level of learning climate.
- H8: A higher level of learning climate will positively associate with a higher level of learning satisfaction with BELS.

### **Research Method**

Survey research was performed in the study using a cross-sectional survey (Wu, Tennyson, & Hsia, 2010, p.159).

### **Subjects**

The study involved a purposive selection of target universities or colleges that implemented BELS courses in Taiwan (Wu, Tennyson, & Hsia, 2010, p.159).

Purposive sampling is done when researchers use judgment to select a sample that is likely to provide the data they need for the study (Fraenkel & Wallen, 2009, p.99).

Snowball sampling (based on needs arising during the survey) and convenience sampling (based on members of the target universities and colleges who were conveniently available for study) were used to select the participants (Wu, Tennyson, & Hsia, 2010, p.159). The sample size appears to be adequate.

### **Main Results**

The results of the study provide support for all of the hypotheses. In terms of the cognitive factors, the results indicate that learners with high computer self-efficacy will have high levels of performance expectations, which will in turn result in high learning satisfaction (Wu, Tennyson, & Hsia, 2010, p.161). In terms of the technological environment, high content feature and system functionality levels lead to high performance expectations (Wu, Tennyson, & Hsia, 2010, p.161). The data

also indicates that system functionality alone is not necessarily sufficient for enhancing performance expectations if content features are poorly designed or mismatched (Wu, Tennyson, & Hsia, 2010, p.161). In terms of the social environment, higher interaction leads to higher performance expectations and learning climate (Wu, Tennyson, & Hsia, 2010, p.162). Additionally, positive learning climate results in positive learning satisfaction (Wu, Tennyson, & Hsia, 2010, p.162).

In summary, the three dimensions of learning satisfaction related to BELS – cognitive beliefs, technological environment, and social environment – were identified in the underlying theoretical models and supported by the results of the study. In essence, strong measurements in each dimension results in greater learner satisfaction within the BELS context (Wu, Tennyson, & Hsia, 2010, p.162). Results of the PLS analysis support these findings (Wu, Tennyson, & Hsia, 2010, p.162). Learning climate and performance expectations were found to be two factors strongly contributing to learning satisfaction within BELS, while system functionality, computer self-efficacy, interaction, and content feature were found to have indirect contributions (Wu, Tennyson, & Hsia, 2010, p.163).

Based on the evidence provided in terms of data analysis and the underlying theoretical framework, I think the conclusions are valid, although one must be cautious when making any generalizations due to the limited sample. All of the conclusions seem to be based solely on the results of the instrument data and the resulting data analysis.

## **Contributions to Advancing Knowledge**

I think the study has important implications given the trend toward e-learning and blended e-learning systems as instructional environments. It establishes some parameters for designing and implementing a BELS environment, including a focus on enhancing learner performance expectations, fostering a positive learning climate, providing incentives and support for enhancing student computer self-efficacy, offering appropriate content features and system functionality, and facilitating interaction (Wu, Tennyson, & Hsia, 2010, p.163). This creates a sort of framework upon which blended e-learning systems should be built in support of learning satisfaction.

Previous research has already indicated a move toward using blended e-learning systems, but has also revealed an insufficient level of learner satisfaction. Therefore, this study was important for examining ways that such systems can be enhanced to promote learner satisfaction. It also prompts and builds a case for future research to gain a further understanding of the factors that impact learning satisfaction in blended e-learning systems, and to attempt to expand the results to additional target populations.

## **Flaws / Limitations**

Though more of a technicality than an issue with the study itself, the article arbitrarily uses the acronym *IS* in the discussion of social cognitive theory without defining the term. It is defined later in the *Research model and hypotheses* section, but should have been defined at its first use.

As with other research methodologies, a random sample is preferred for survey research, which automatically raises potential issues with the results of this particular study. The rationale given for the sampling approach employed is reasonable; however, especially given the limited feasibility of obtaining a random sample. The researchers also provided a detailed description of the sample, which is particularly important when random sampling is not feasible (Fraenkel & Wallen, 2009, p.103).

The study also has limited generalizability due to the target population being limited to Taiwan, although this flaw is fully acknowledged at the end of the article. Also acknowledged are the issues inherent with self-report instruments. Since these limitations are acknowledged, it is expected that consumers of the research will apply the conclusions with these concerns in mind.

### **Relation to My Career**

This study has direct relevance for my job-related activities. I am an instructional designer for a global company. In a recent project assignment, I was given a directive to use blended e-learning for a course that is currently under development. While I must keep the aforementioned limitations of the study in mind, I think it is important to consider the key points of the conclusions during the development of the blended e-learning project. This is actually a new approach for our learning organization and is part of a rapid learning development program for several company initiatives. As such, it will be important to keep learning satisfaction at a high level. This study has provided some insight as to important considerations for accomplishing this goal.

## References

- Fraenkel, J. R., & Wallen, N. E. (2009). *How to design and evaluate research in education* (M. Ryan & D. S. Patterson, Eds., 7th ed.).
- Wu, J., Tennyson, R., & Hsia, T. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers & Education*, *55*(1), 155-164.  
doi:10.1016/j.compedu.2009.12.012.