Do Content and Design of Interactive Economics Learning Website Influence Students' Satisfaction?

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Abstract— Passive learning only relies on listening to teacher's lecture or rote memorization of information. However, with interactive learning, students can participate in the conversation, through technology and other activities. Interactive learning with videos and audios can keep students interested and reinforce skills. Therefore, Interactive Economics Learning Website was developed. The website is exciting, challenging, and fun to use that encourages students to learn. In order for students to get good experience in using this website, their satisfaction should be taken into consideration. The students in Universiti Teknologi MARA Seremban have been guided to use the website and were given a set of questionnaire regarding their satisfaction of the website. The analyses were conducted using Structural Equation Modelling (SEM) with 209 valid samples. The objective of the study was to investigate the influence of the content and design of the website to students' satisfaction. The results show that the content and design had significant influence on students' satisfaction. The standardized regression coefficient for the content and design of the website to satisfaction were 0.26 and 0.83 respectively. Coefficient of determination linking content and design to satisfaction was 0.99.

Keywords—Interactive Learning, Games, Website Satisfaction, Structural Equation Modelling

I. INTRODUCTION

Students always complain that they are facing difficulties in understanding terms in Economics. They also feel that conventional teaching method is not suitable for them since the exposure of many technological devices at home has made them bored in the passive learning environment that does not utilize these technological devices while learning. In order to keep students engaged, they need to be interested.

In recent years as multimedia and online information have quickly developed, the style of learning has also changed. It leads to the practicing of interactive learning that incorporates games, videos, notes and other elements. This learning style is in contrast with the traditional leaning style (face-to-face) which the information basically comes directly from the teachers. Through this way, the learning interests of students can be stimulated then enhance their learning effectiveness. Students' learning style can also be changed from reactive to active, and this learning process will proactively improve the quality of their knowledge and information.

Being aware of this issue, Interactive Economics Learning Website was designed to assist students taking Economics, a course offered at both college and university levels. It covers chapters on Microeconomics and Macroeconomics. The website combines the elements of notes, exercises, videos and useful links to other Economics websites. The website is different from others because of the element of game-based learning. There are seven types of games: crossword, word search, word scramble, brain teaser, jigsaw puzzle, sliding puzzle and hangman for all the topics. The Interactive Economic Learning website was developed using a free platform and games tools. Students can freely download all notes and exercises from the website (www.interactiveeconomicslearning.weebly.com).

The degree of students' satisfaction plays an important role in the adoption of this interactive learning style in the process of learning and teaching. According to Moore and Kearsly (1996) students' satisfaction is an important indicator of the quality of learning experiences. Dewiyanti et al, (2007) state that in web-based collaborative learning system, students' satisfaction with collaborative learning can be described as the degree to which a student feels a positive association with his/her on collaborative learning experiences. Additionally, students' satisfaction can have repercussions on whether they like to use the system or not, how they work together and whether there is a good working atmosphere among them (Guuwadena et al, 2001).

Students' satisfaction is also important because it influences their level of motivation (Chute, Thompson, & Hancock, 1999; Donahue & Wong, 1997), which is an important psychological factor in their success There is evidence that their satisfaction is positively related to retention and a decision to take one or more additional courses (Booker & Rebman, 2005).

In a study of problem-based web learning environment, Oliver and Omari (2001) found that majority of the students saw value to be gained from, and appeared satisfied with, their learning experience. Other than that, a study guide, additional reading material and resources, and material which are considered as the resource material that is relevant to the subject has been identified as predictors in students'

satisfaction (Aman, 2009; Mandernach, 2005). Krichen (2007) investigated the potential of using knowledge of learning styles to improve online learning and students' satisfaction. The findings revealed that activities which mismatch learning styles can impair the learning experience. Moreover, students who at least knew their learning styles and could use this knowledge to accomplish learning activities were more satisfied and subsequently completed more activities than those who had no knowledge of their learning styles.

Other than content, website design is also one of the most important things that should be considered when developing a website. The website needs to be aesthetically attractive and have excellent usability that enables visitors to find a user-friendly and eye-catching website. Zhang (1999) studied the website that satisfies users by conducting a framework for web user interface design and evaluation. Among the implications and contributions of his research is the identification of web design features that may maximize the likelihood of users' satisfaction and return visits to the website. Zhang et. al, 2000 investigated a two-factor model that could guide Website design and evaluation. The results showed that the two-factor model provides a means for Web-user interface studies.

Students' satisfaction on the website is important because it shows a direct line to what the visitors are thinking and feeling while engaging with the website. Moreover, measuring the satisfaction of the students can help in improving better quality service. Thus, the objective of the study was to investigate the students' satisfaction of the website. Specifically, this study aimed to investigate the influence of the content and design of Interactive Economics Learning Website to students' satisfaction.

II. METHODOLOGY

The questionnaires were distributed to the students who sat for the Economics class in UiTM Seremban. 230 questionnaires were distributed, however only 209 questionnaires were returned. There were ten statements reflecting students' satisfaction on the website as presented in Table 1.

TABLE 1
STATEMENTS AND ITEMS

Item	Statement
Note	1. The notes are presented in an easy and clear way.
Game	2. The games help me in memorizing the facts.
Exercise	3. Answers provided in the exercises help me in better understanding.
Video	4. The video presentation is easy to understand.
Link	5. The links provided in the website are very useful to me.
Attract	6. The design of the website is attractive.
Well	7. The design is well organised and in the ease manner.
Comfort	8. I am comfortable with the design.
Expect	9. The website meets my expectation.
Info	10. The website provides me with all the information I need.

The analysis was examined through Path diagram by using *SPSS* and *AMOS* software. Path diagram displayed the

full sets of relationships among the model constructed. The first step was to check the normality of the data. The distribution of the data must not depart from normality because statistical analysis is not valid if the data collected do not follow the normal distribution. Next, the reliability test was conducted. The popular measure to determine reliability for the measuring items in each component is by using the Cronbach's alpha. The Cronbach's alpha above 0.6 provides a reliable measure of internal consistency.

A good fitting measurement model is required before interpreting the causal paths of the structural model. Goodness-of-fit of the structural model can be measured by using Chi-square (CMIN in AMOS) and p-value. The higher the probability level associated with chi square, the better the fit is. The other fit measurement is baseline comparison such as Normed Fit Index (NFI), Relative Fit Index (RFI), Incremental Fit Index (IFI) and Parsimonious Fit Index (PFI). The popular measure of fit is Root Mean Square Error of Approximation (RMSEA). RMSEA less than 0.06 is considered as a good model fit.

This study theorized that the two construct namely the content and design of the website had a significant influence on students' satisfaction. Figure 1 shows the theoretical framework and the hypothesized relationship among the constructs in the study. Statement one to five in Table 1 represents the content of the website, six to eight are categorized under the design of the website, and the last two statements represent students' satisfaction.
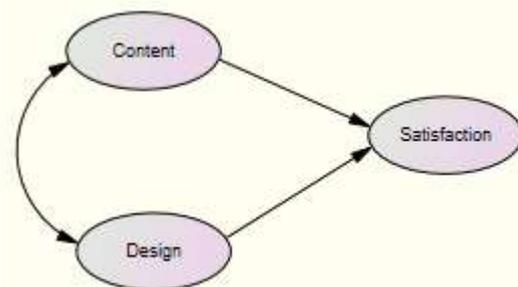

Fig. 1: Theoretical Framework for Satisfaction of Interactive Economics Learning Website

III. RESULTS

The skewness statistics for all variables in Table 2 are between -0.301 and -0.054. The measure between -1 and 1 is considered normally distributed. Hence, the data in this study meets the required assumption for statistical analysis.

The reliability of the study is determined by Cronbach's alpha. The values of Cronbach's alpha are 0.783, 0.801 and 0.638 respectively for the content, design and students' satisfaction. It suggests that the items had relatively high internal consistency and reliable.

Goodness-of-fit results are shown in Table 3. The result of chi-square is insignificant with p>0.05. It is confirmed by the Baseline comparisons where the values are exceeded 0.90. Meanwhile, RMSEA value is 0.044 which is less than 0.06. All fit indexes prove that the model is fit and consistent.

TABLE 2
NORMALITY ASSESSMENT

Variable	Skew	C.R.	Kurtosis	C.R.
Info	-.264	-1.559	-.203	-.600
Expect	-.169	-.996	-.165	-.486
Comfort	-.054	-.317	-.611	-1.803
Well	-.160	-.946	-.441	-1.301
Extract	-.087	-.515	-.842	-2.486
Link	-.301	-1.775	-.232	-.685
Video	-.041	-.244	-.642	-1.895
Exercise	.028	.168	-.479	-1.413
Game	-.453	-2.676	.279	.823
Note	.029	.173	-1.021	-3.013

TABLE 3
GOODNESS-OF-FIT

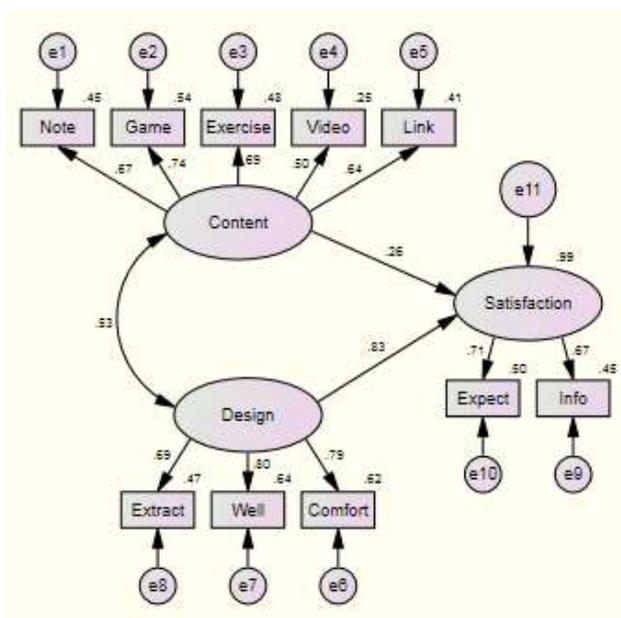| Goodness-of-Fit	Coefficient / Index
Model Fit Summary	
CMIN	44.79
Degree of Freedom, *df*	32
Significance level for chi-Square, *p(>.05)*	0.067
Baseline Comparison	
1. NFI	0.941
2. RFI	0.917
3. IFI	0.983
4. TLI	0.975
5. CFI	0.982
RMSEA	0.044

Fig. 2: The Path Diagram with Correlation Value

It is also found that the design of the website had a significant and direct influence on students' satisfaction. The probability of getting a critical ratio as large as 7.543 in absolute value is less than 0.001. In other words, the regression weight for design in the prediction of students' satisfaction **i**s significantly different from zero at the 0.05 level. The covariance between content and design is estimated to be .167 with a standard error of about .033. 0.534 is the estimated correlation between content and design**.**
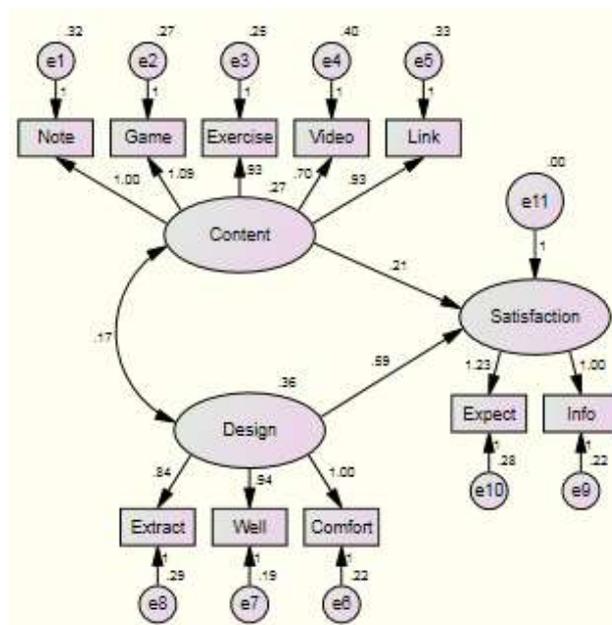
Further analysis was conducted to identify significant paths in the model. The circles represent latent variables and the rectangles represent measured variables. In the standardized model, AMOS output provides the correlation between variables. The output in Figure 2 shows the correlation between the content and design that is 0.53. The standard deviation in the variable 'game' is 0.54. The standardized regression coefficient for the content and design to students' satisfaction are 0.26 and 0.83 respectively. Coefficient of determination linking content and design to students' satisfaction is 0.99.

The unstandardized model in Figure 3 presents the regression coefficient linking the independent constructs to the dependent construct in the study. Table 4 shows the corresponding text output. Since the p-value is lower than 0.05, the null hypothesis is rejected. Hence, it can be concluded that the content of the website had a significant and direct influence on students' satisfaction. When content goes up by 1, students' satisfaction goes up by 0.213 with standard error of about .074. The probability of getting a critical ratio as large as 2.868 in absolute value is .004.

Fig. 3: The Path Diagram with Regression Model

TABLE IV
REGRESSION WEIGHTS

			Estimate	S.E.	C.R.	P
Satisfaction	<---	Content	.213	.074	2.868	.004
Satisfaction	<---	Design	.590	.078	7.543	***
Note	<---	Content	1.000			
Game	<---	Content	1.093	.128	8.514	***
Exercise	<---	Content	.929	.114	8.141	***
Video	<---	Content	.705	.114	6.192	***
Link	<---	Content	.925	.120	7.686	***
Extract	<---	Design	1.000			
Well	<---	Design	.942	.084	11.227	***
Comfort	<---	Design	.844	.087	9.675	***
Expect	<---	Satisfaction	1.000			
Info	<---	Satisfaction	1.234	.139	8.865	***

IV. CONCLUSION

This study examined the influence of the content and design of Interactive Economics Learning Website to students' satisfaction. The results show a positive significant linking of these two components to the students' satisfaction. The standardized regression coefficient for the content and design of the website to satisfaction were 0.26 and 0.83 respectively. Coefficient of determination linking content and design to satisfaction was 0.99.

Students' satisfaction is important in order to attract students in online course learning. However, continuous improvement on the quality of the website should not be neglected to make this website relevant in the future.

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