Exploring the Perceived Ease of Use by Professors in Tesys e-Learning Platform

Paul Ştefan Popescu[1], Marian Cristian Mihăescu[1], Mihai Mocanu[1], Costel Ionaşcu[2]
[1]Department of Computers and Information Technology
University of Craiova, Romania
{spopescu, mihaescu, mocanu}@software.ucv.ro

[2]Faculty of Economics and Business Administration
University of Craiova, Romania
icostelm@yahoo.com

ABSTRACT

E-learning platforms are educational environments that have grown once with the information technology. They bring several features and advantages but there are also enough features that may be developed and others that may be explored. This paper presents an exploratory analysis regarding how the professor perceive the ease of use of the Tesys e-Learning platform. In order to perform the analysis, we use R and Wilcox statistics. We separated the data in two groups using the number of years and hours spent on the platform and tested them for group significant separation. The results show no difference between groups and so, we can conclude that all the subjects that completed the questionnaire are not influenced by other factors. There is also another implication of the results of this study because having the same results for both groups there is a consistency between all answers and the average grade a question got.

Author Keywords

Interface evaluation; e-learning; HCI.

ACM Classification Keywords

H.5.2. User Interfaces: *Graphical user interfaces (GUI); Interaction styles*.

General Terms

Human Factors; Design; Measurement.

INTRODUCTION

Once with the information technology growth alternatives to the classical learning environments appeared. E-learning platforms offer many benefits to learners because this environment offers access to learning resources without the need to be at a specific time in a specific place. Every professor has the possibility to make his own schedule but this comes with some drawbacks because the professors need to invest more time in learning resources in order to offer better experience for learners. It is important for both students and professors to explore the perceived ease of use in order to be able to improve the e-learning experience. In our case we use Tesys [1] e-learning platform, an e-Learning platform developed at the University of Craiova which was designed for fulfilling specific needs but as new functionalities get implemented the usability in some cases decreases. One important aspect that needs to be mentioned is that the e-Learning platform was designed by computer professionals but used by people from different domains and the adaptability to the interface and functionalities tend to differ based on their context. In this paper, we aim to evaluate the professor's interface and functionalities in order to see how easy they adapt to the actual version of platform and also to gain a better intuition on what will be changed in the next release.

The interface of an e-Learning platform is very important for users that interact with it and as the platform receives more updates, some functionalities may become hard to be reached and also the new functionalities may not be intuitive enough.

The e-Learning platform used for this study is Tesys, a custom build platform that was entirely developed at the University of Craiova. There are four roles in which a user can be when he accesses Tesys e-Learning platform: student, professor, secretary or administrator. The biggest number of users is achieved by the role of student, then the role of professor has the next number of users and then secretaries which are two or three on the platform and the administrator which is only one. Based on this, wet explored first the students' interface and now, this paper focuses on the professor's interface being the second as importance. As the number of professors and the level of usage grows, there are frequent questions regarding some functionalities but we think that there may be more functionalities that are not well optimized and we try to

discover the issues before the problems are reported. One other important issue is to explore the perceived ease of use and see what are the main factors that makes the differences between different groups.

E-learning platforms are evolving very fast and with new functionalities we need to explore how users perceives them. Professors that perform their action on e-Learning platforms are very important users because of their long-time activity in the platform and, they can offer a more relevant feedback. A better level of understanding regarding the professors' perceived ease of use will give an intuition regarding what can be changed or improved to offer a better learning experience.

In this paper, tested several factors that may influence the perceived ease of use in the e-Learning platforms. For the analysis procedure, we used Wilcox statistical method. As a expected result of this study there is knowledge that can be gained regarding the motives that makes Tesys e-Learning platform underutilized. The professors' attitude regarding the platform influence the interaction between user's and platform and also the attitude of students.

In this paper, we used the questionnaires method in order to find key issues that may be improved in the next release and to explore the ease of use perceived by the professors that teach their courses on the platform.

The questionnaires were administered to the professors that teach at the Faculty of Letters (FL) and the Faculty of Economics and Business Administration (FEAA). We used a total number of twenty-four questions divided in three categories: ease of use evaluation, control questions and group separation questions. In order to evaluate the perceived ease of use we used R as environment and Wilcox statistic method to explore the differences between groups.

RELATED WORK

Evaluation of e-Learning platforms [2] is a currently complex problem [3] due to many issues that need to be taken into consideration. Besides general issues like usability and accessibility, e-Learning platforms need to address the didactic effectiveness from student's and professor's perspective.

There are different approaches for evaluation of this kind of systems like eye movement approach [4]. This kind of approach tries to find areas where eye tracking may impact the interface evaluation but there is also a drawback because this kind of evaluation requires special equipment.

There are also papers that describe several other methods for usability evaluation in virtual environments like [5] in which they define and classify several types of evaluation

among with their issues. The authors state some distinctive characteristics of virtual environment characteristics like physical environments issues, evaluator issues, user issues, issues related to the type of evaluation and even other issues. After considering all those issues they define some current evaluation methods like c Cognitive Walkthrough, Formative Evaluation, Heuristic or Guidelines-Based Expert Evaluation and others.

John P. Chin et. al. [6] conducted a research effort to develop the Questionnaire for User Interface Satisfaction (QUIS). For this study, the authors, had 150 pc users and he tested the reliability of the questionnaire using cronbach's alpha on two pairs of software categories: 1) software that was liked and disliked, and 2) a standard command line system (CLS).

Exploring how users perceives the ease of use and the technology acceptance is one important research issue that was addressed earlier than twenty-five years ago in [7].

This problem was further addressed even in a stronger relationship with e-Learning platform in other papers. One newer paper that explored the student's acceptance model in Jordan universities written by Amer Al- Adwan et. al. [8] explored the influence of perceived usefulness, perceived ease of use, attitude towards, and intention to use using Cronbach alpha [9]. This aggregation of metrics was called Technology Acceptance Model [10] [11].

One interesting paper that combines the technology acceptance model with the didactic cycle was published recently in 2014 by Claus-Peter H. Ernst et. al. [12] and they state that despite the advantages of e-learning platform they are usually underutilized. The attitude towards learning whole learner's corresponding whole life attitudes. The authors seek to identify potential influence factors of students toward attitude using e-learning technologies.

There are also two papers that need to be mentioned as related work because this paper is a follow up. The first study regarding the usability of Tesys e-Learning platform [13] tackled the problem of the student's interface but used a small group of students which saw for the first time the e-Learning platform. The results revealed some bugs and issues which were already addressed but due to the small number of participants there was not too much knowledge gained regarding the usability and no statistical methods could be applied. The second one [14] extended the first study but this time using participants that already used the platform. The second study was larger and we integrated the questionnaire in the platform using google docs, so the students could access the questionnaire for big amount of time. We also used in that paper Wilcox method to separate groups and in the case of students we got significant

differences between questions.

questions for group separation (GS).

Regarding the ease of use we proposed fourteen questions that were meant to reveal if there are any problems, these questions were meant to be validated by the control questions (6): 4 for the groups of questions, one for overall validation and one for explanations regarding the help section that also validates the previous question because if the answer was low but no suggestions were made there is a certain inconsistency. If there was inconsistency between
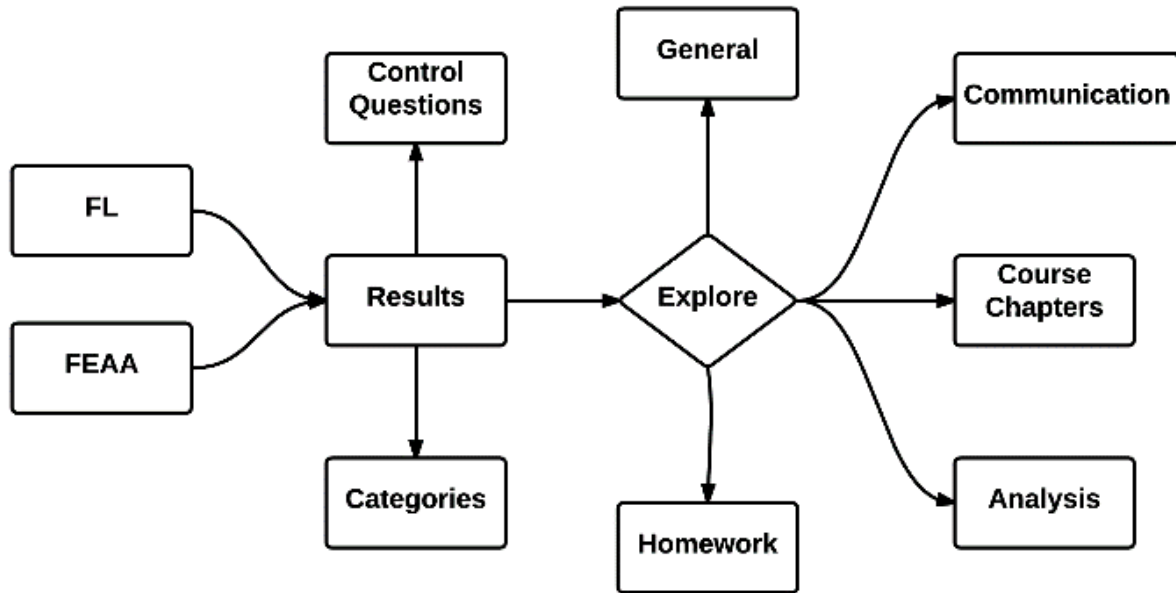

Figure 1. Design Flow

the control question and the group of questions validated by it the questionnaire was disregarded. Four questions were used for group separation and based on them we are able also to get an intuition regarding the level of experience of the responder and how often do they use the platform.

STUDY SETUP

Figure 1 presents the overall flow for the study. We gathered results from FL and FEAA, and the results contained the studied questions but also control and categories question on which we perform the statistical analysis. The main questions explored 5 principal categories: homework module, course module, communication module, the students' analysis module, and one section that aimed to evaluate the main interface.

On this study, 34 professors completed the questionnaire, 18 from FL and 16 from FEAA. The questionnaire has twenty-four questions divided in three main categories:

- questions regarding the platform's ease of use (EU),
- control questions (C)

No	Question	Type
1	How easy do you find the courses that you teach?	EU
2	Have you ever used the manage function of a discipline?	C
3	Organizing chapters, homework, links on the course management page is intuitive?	EU
4	From 1 to 5, how easy was the process of adding a new chapter?	EU
5	From 1 to 5, how easy is to setup a new question for the course chapters?	EU
6	Until now, have you ever used the	C

	homework management function.	
7	From 1 to 5, how easy is to add a new homework?	EU
8	From 1 to 5, how easy is to give grades to homework?	EU
9	Adding external references (links) for the disciplines is easy to use?	EU
10	Did you found fast the external references (links)?	EU
11	Have you ever used the analysis module from the disciplines?	C
12	The data regarding the students was enough?	C
13	How intuitive is the data regarding the students presented in the analysis section?	EU
14	Have you ever used the Communication section?	C
15	From 1 to 5 how easy did you used the section "communication with students"?	EU
16	From 1 to 5 how easy did you used the section "communication with secretaries"?	EU
17	From 1 to 5 how easy did you used the section "communication with professors"?	EU
18	The "Help" section offers enough data?	EU
19	If you choose "no", please describe what it should contain?	C
20	How many disciplines do you teach at distance learning?	GS
21	At what year of study do you teach?	GS
22	How many years of experience do you have at distance learning?	GS
23	How many hours a week do you use the e-Learning platform?	GS
24	What overall grade do you give to the platform?	C

Table 1. Questions and groups

Table 1. presents the questionnaire setup. On the first column, we have the question number, the secont column has the questions and the last describes the type of the question. In the paper, the number of questions will be further addressed.

EXPERIMENTAL RESULTS

In order to explore the perceived ease of use, we considered two of the group separation questions and we explored if the tested factors influence somehow the perceived ease of use. We disregarded for the study question twenty, and twenty-one because the lack of information, most of the professors that completed the questionnaire were teaching at almost all years, and the number of disciplines was from one to three for 94% of the professors from FL and 100% from FEAA.
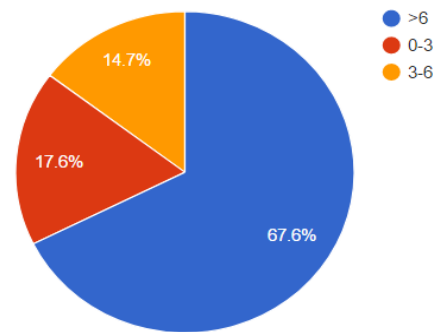

Figure 1. Years spent on platform

Figure 1 presents the number of years since the professor's that attended this study started to use Tesys. This answer somehow motivates the small number of hours spent weekly because if they already have a very good experience with the platform there is no need to spend many hours on the platform in order to manage courses, questions etc.

In order to have significant groups we decided to have a threshold of 6 years and we merged the two groups from zero to three and from three to six years and we obtained one which is referred as less than six years in the next table.

QID	p value	W statistic	Average for <6 years	Average for >6 years
1	0.585	115	4.739	4.181
3	0.736	117.5	4.260	3.818
4	0.864	122	4.565	4.090
5	0.675	137.5	4.086	3.909
7	0.697	136.5	4.347	4.090
8	0.346	102	4.173	3.454
9	0.625	113.5	4.130	3.545
10	0.431	106	4.043	3.545

13	0.788	119	3.913	3.545
15	0.860	121.5	4.130	3.727
16	0.381	149.5	3.782	3.909
17	0.877	131	3.826	3.636
18	0.741	135.5	3.869	3.818
24	0.798	119.5	4.217	3.818

Table 2. Wilcoxon results on number of years spent on the platform

Table 2 presents the results obtained after separation of the data in two groups based on the number of years on which the professor that answered performed his activities on the e-Learning platforms.

The first column from the table represents the question's number, the second the w statistic, then, the third is regarding the *p* value and the last two columns represent the mean values for the chosen categories. Based on the data collected we defined two groups, professors that have an experience of over six years in the Tesys e-learning platform, and professors that have an experience below six years. We use w statistic and p value to get an intuition regarding how significant is the difference between the two categories.

Based on the results we collected we can say that the number of years spent on the e-learning platform do not influence the grade that was given to the questions.

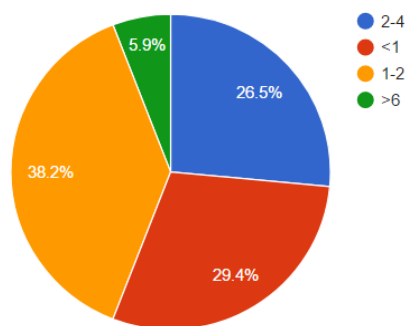**Count of "How many hours do you use the platform weekly?"**

Figure 2. No. of hours spent on platform

Figure 2 presents the distribution of the number of hours spent on the platform weekly. From the figure, we can conclude that professors used the platform very low, most of the professor's spend less than two hours per week on the platform. In the next table, we present the results for two groups, we merged that had less than one hour with the

one that spent one to two hours and then the other two ones obtaining two more comparable groups on which we could use Wilcoxon statistic.

QID	p	W statistic	Average grade for <2 hours	Average grade for >2 hours
1	0.961	133.5	4.666	4.5
3	0.588	146.5	4.083	4.136
4	0.136	168	4.333	4.454
5	0.906	128.5	4.083	4
7	0.602	118.5	4.416	4.181
8	0.630	119	4.166	3.818
9	0.632	119	4.166	3.818
10	0.551	116	4.083	3.772
13	0.638	119	3.916	3.727
15	0.744	141	3.916	4.045
16	0.924	129	3.833	3.818
17	0.954	134	3.666	3.818
18	0.362	156.5	3.583	4
24	0.953	130	4.166	4.045

Table 3. Wilcoxon results on number of hours per week spent on the platform

Table 3 presents the results after exploring if the number of hours spent on the platform offers significant difference between groups. The chosen threshold tested was of two hours spent in one week.

The first column from the table represents the question's number, the second the w statistic, then, the third is regarding the p value and the last two columns represent the mean values for the chosen categories.

Analysing the results, we can say that also in this case the number of hours do not influence the perceived ease of use regarding the e-learning platform.

CONCLUSIONS

In this paper is presented an exploratory analysis in order to see how Tesys e-Learning platform is accepted among professors that teach in this learning environment. The results highlighted that no matter what time do they spend weekly on the platform or their experience, the professors accept with no significant differences the way Tesys is built. The overall grade of the platform is above four, so on a scale from one to five, the overall grade indicates a good technology acceptance.

The limitation of this study is represented by the dwindling number of professors that answered our questionnaires and the small number of group separation questions. Even

though in the questionnaire there are more group separation questions, the groups distribution was not good enough to explore the data. Increasing the audience of the study may provide more data and better group separation and this would have been possible if the study would have taken more time.

The main conclusion that can be taken from this paper is that the experience and the number of hours spent on the platform do not influence the way professors accept Tesys e-Learning platform and on a scale from one to five, the mean overall grade is above four. There were a few issues highlighted in the communication module which is already under the solving procedure.

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