

Using Dashboard Tools to Evaluate E-Learning: TICS Approach

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Abstract: *The development of quality e-learning tools requires rigorous evaluation techniques that highlight the different aspects that must be taken into consideration in developing them. The evaluation of this tool was conducted in a control group with a test group and they asked students about the perceived usefulness, appropriateness, level of understanding and behavioral changes of the graphics. The results show that this newly developed learning analysis tool is not a significant influence on learning success.*

The dashboard tool is an application that does reflect behavior patterns for students' online in a virtual learning environment. This tool monitors student diary files, works by finding a number of mining data meaningfully and evaluating the results so that the results can be displayed. This paper looks at pre-developed applications for property analysis to identify the student performance in each module.

Recently dashboard was designed by a postgraduate student so that students provide a quick and powerful way to self-evaluation with overall performance of students.

It is one of the new methods used to evaluate e-learning systems, called as TICS (Technology, Interaction, Content, Services), it has been utilized to check an e-Learning dashboard.

Keywords - *E-Learning, developing, evaluation, self-evaluation, performance, dashboard, TICS*

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I. Introduction

E-learning applications are becoming increasingly successful. Educational effectiveness has increased through the integration of multimedia resources, free access to information anytime, anywhere, electronic assessments and pre-evaluations.

Effective assessment techniques represent an essential part of e-learning environment. Monitoring student performance helps to improve their enthusiasm to learning as well as developing academic programs.

A dashboard is an assessment tool that facilitate the student performance monitoring through visual reports of key performance indicators.

In this research paper, we propose an evaluative study on a dashboard tool that was developed for e-learning system. The evaluation was based on a new framework called as TICS (Technology, Interaction, Content, Services).

II. Dashboard Application

The dashboard displays student progress in certain activities through graphs that display results and a little analysis of data on learners. This will help improve the quality of teaching and learning practices in an e-learning environment. The application presents student results that are formed through the level of progress and performance of academic staff. After analyzing the results of the students, the teacher writes his comments to each student. Every student can see his/ her results. This will enable the self-organization of the learners as they enable them to evaluate, see, know, know and follow their progress towards learning goals, and organize their strategies to achieve those goals. [2].

This review of the tool was conducted in an experimental research setting with a control group and additional surveys were conducted asking students about the noticeable benefit, conformity, level of understanding in graphs, and their behavioral changes. The results indicated that this advanced educational analysis tool did not significantly affect scientific achievement. However, lessons learned from usability and experimental testing support that visual information affects the level of student understanding; overall satisfaction with the dashboard as a common variable influences the perceived understanding and change of behavior of students. Taking test results and open student responses, a scaffolding strategy was included to help them understand the meaning of the information presented in each sub-section of the dashboard. [7]

Instead of measuring classroom responses or labeling, a single-click mouse can provide accurate real-time monitoring and reporting on key performance indicators, not only enterprise-wide vision, but also the

ability to move to a very granular level as well. By highlighting any problems as they occur, teachers can review areas of teaching and teaching methods, and consider performance to identify key trends and track learners. This in turn provides ongoing feedback from students, trainers and course designers, helping to improve learning and learning outcomes and improve cost efficiency. [5]

III. Framework Of Tics

The quality of software is an important activity after promoting software quality. This will help improve the quality of this software category. TICS is the e-learning tool has a relatively new diagnostic framework. It targets several performance goals, which focuses on the simplicity of interaction between the system and the system's support system. It illustrates the most important aspects that must be taken into account in the design and / or evaluation of the overall quality of e-learning systems.

An evaluative methodology derived from TICS dimensions, called e-LSE (e-Learning System Evaluation) was followed [3].

The e-LSE consists of the flow of activity involved, which is necessary to generate a diagnostic inspection and a user-based assessment of a powerful technology. Inspection is intended to allow inspectors who may not have extensive experience in evaluating e-learning systems to conduct accurate assessments. It is based on the use of valuation patterns, called as Abstract Tasks (AT), which accurately describe the activities to be performed during the inspection. The user-based tests are then set up in the light of the scan output and given to the real users in order to obtain their observations as feedback.

Two phases are in e-LSE: Preparatory phase and execution phase.

The preparation phase for each analysis dimension is done only once; its purpose is to create an imaginary framework that will be used to carry out the original diagnosis. Production phase of production can easily be shared jointly with different diagnostics, or different diagnostic laboratories that assess similar applications similar to their interests. In this phase is prepared only once and consists of setting performance goals and redaction of library of ATs. An AT describes accurate activities that must be performed by the observer to evaluate particular elements of the application.

ATs respect an integrated model including AT Classifications, Codes and Titles, Actions to Focus, Purpose and Activity Descriptions.

Contrary to the preparation stage, which applies only once, every evaluation of the software is processed. Including an organized inspection conducted by experienced residents and user-based testing.

During a regular examination, use the predefined ATs library to examine different parts of the evaluation software and then make a report including accurate analysis. [4]

Through the testing based to users, the real users will examine the software.

IV. Using Tics To Evaluate The Dashboard

As illustrated in this research, TICS focusing on four parts which represent the categories of evaluation criteria: Technology, Interaction, Content and Services. Considering the actual E-learning tool, we can define the following:

Technology: It has some features as shown below:

- Performance: Time response, sufficient networks bandwidth.
- Ease to integrate and link: It can be connected to a current LMS
- Movability: It can be combined on various systems.

Interaction :

- Flexibility: It can be quick understand, ease to navigate
- Diagrammatic design: It has a clear fonts, appropriate colors and charts.

Content :

- This aspect applies to the type of material and the ability of the e-learning system to provide learning processes with learners who are release to choose their own track independently.
- Efficiency of educational processes.
- Appropriate and specific contents: The evaluation of student activities and exams displayed on the dashboard.

Services :

- This includes tools that serve and support user learning materials. It is essential to provide users with tools, self-assessment, helpdesks, search engines and guidance. Simplicity of training and the ease of use of these tools allow users to focus their efforts on learning paths, not too much time trying to understand how the e-learning system works.
- Beneficial facilities: It is necessary and useful for students and teachers to present student's progress in activities.

- It includes the AT set that configured according to the type and purpose of the software.

Table I : ATs

<p>Question-1: Diagrammatic Interface Graphical interface elements Intent: evaluate the graphical design and colors Descriptions of Activity:</p> <ul style="list-style-type: none"> • Colors • Features fonts and size • Integrated style • Exaggerated animation • Clarity of fonts 	<p>Question-2: Ease to Navigate Navigation elements Intent: This uses a repeated and diverse navigation analysis tools. Descriptions of Activity:</p> <ul style="list-style-type: none"> • List of options involved • Footer_link • Homepage Links • Anchor • Before/Next pages • Direct access to any parent's expectations for sub-classes.
<p>Question-3: Efficiency Effectiveness of facilities Intent: analyze the degree of efficiency of services Descriptions of Activity:</p> <ul style="list-style-type: none"> • The application goals have been achieved • Information for students and teachers • Charts give enough information • Privacy: Some results can only be found with this tool. • User appreciate the tools and understand its importance 	<p>Question-4: User guidance Availability of sufficient support to new users Intent: analyze the existence of diversified and clear support Descriptions of Activity:</p> <ul style="list-style-type: none"> • There is a supportive link to the system • Include helpful information • The perfection of auxiliary information • There is an instruction manual for instructions • Include the information in the User's Guide • The information in the User's Guide is clear • Description of all elements of web pages is not available • Specify the description of the form elements
<p>Question-5: Flexibility Easy to use and diffuse among educational society. Intent: Analysis of learning time and probability of risk. Descriptions of Activity:</p> <ul style="list-style-type: none"> • The time required to learn the tools • Risk potential • Degree of worst-risk due to misuse • Follow a shorter path to get all results 	<p>Question-6: Performance It has a quick and reliability implementation. Intent: Analysis the time of implementation and finds the errors in system Descriptions of Activity:</p> <ul style="list-style-type: none"> • Suitable time to response • Specific Time for downloading and uploading • Amount of errors
<p>Question-7: Internal development The design and coding are of good quality Intent: analyze the modules and the code Descriptions of Activity:</p> <ul style="list-style-type: none"> • Organizing the reasonable unit • Few unit dependence • Summary codes • Comment on the code • Dealing with exceptions 	

Inspection: During this phase, we tried to evaluate the dashboard application based on the aspects that were already underlined through the ATs.

The following results were elaborated:

- Graphical interface: The content of the interface is clear and respects the standard web page style.
- Easy to navigate: the application lacks some navigation tools: no footer links, no anchors, link to home page is not always available.
- Efficiency: the degree of efficiency is acceptable, the information provided to students and teachers is useful. Yet, other useful results and data analysis are ignored.
- User guidance: user guidance is not sufficient. The help content is clear but does not cover all application parts. No user manual was provided. Some descriptions were provided along with form elements.
- Flexibility: The application is ease and does not take long to understand it. Some risks have been identified during the test, but are classified under lower risk categories.
- Performances: The application runs faster and could not find any errors.
- Internal development: The design is perfect, good and organize. The codes may be more intense. Many comments are made.

Feedback FROM Users

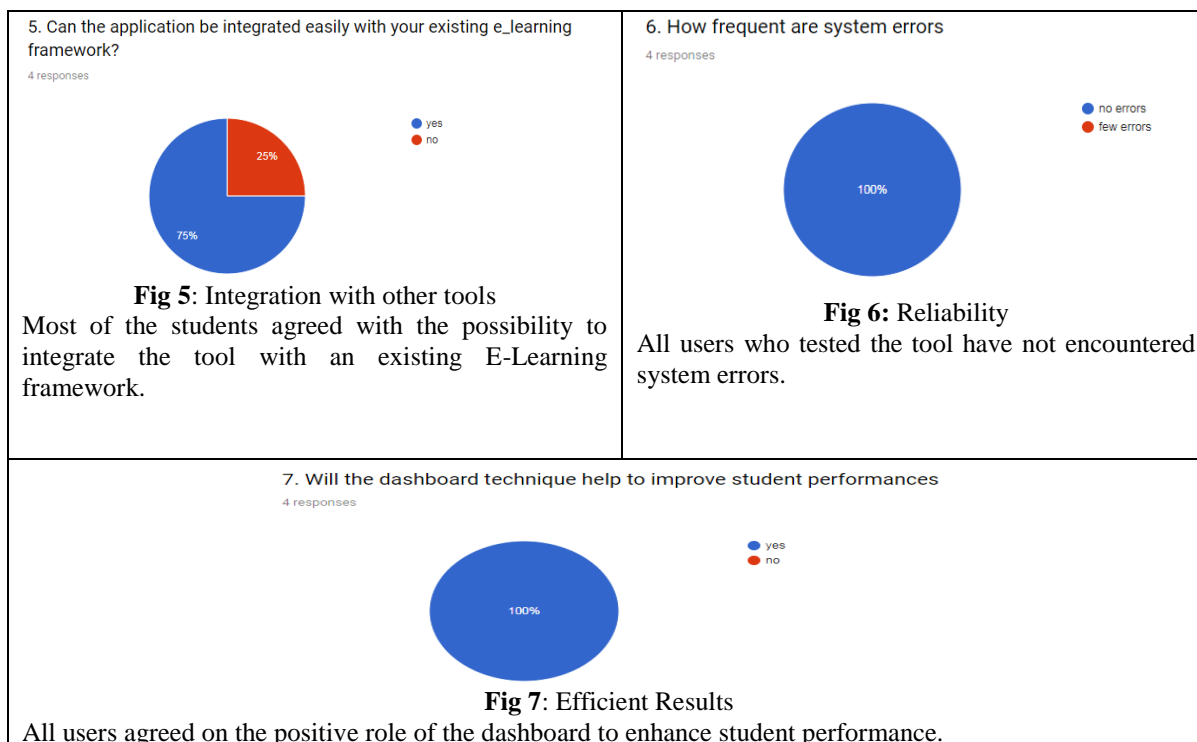
We prepared a questionnaire to evaluate the e-learning dashboard. A number of questions were developed and sent to students and teachers representing the tools in future for users. This evaluates the effectiveness of applications, identifying the strengths and weaknesses of the application. The Following Questions were asked:

- 1.How easy is the use of the application?
- 2.Response Time. (How much time is required to get the result?)
- 3.How clear and understandable is the graphical user interface?
- 4.How useful are the services of the application?
- 5.Can the application be integrated easily with your existing e-Learning framework?
- 6.Is the Design is a suitable in color and content?
- 7.Will a dashboard technique help to improve the student's performance?

The result of the responding feedback from the users is shown below:

Table 2 FEEDBACK FROM USERS

<p>1. How easy is the use of the application</p> <p>4 responses</p> <p>Fig 1: Ease of Use The result shows that most of students found the application to be relatively easy to use.</p>	<p>2. response time</p> <p>4 responses</p> <p>Fig 2: Response time Most of the students that tested the tool found the execution quick.</p>
<p>3. How clear and understandable is the graphical user interface</p> <p>4 responses</p> <p>Fig 3: Ease of use Users considered the graphical design easy.</p>	<p>4. How useful are the services of the application</p> <p>4 responses</p> <p>Fig 4: Efficient Services is Most of the users appraised the tool services as relatively useful. And few users considered it is not useful.</p>



It was interesting for the actual user to test the e-learning tool and gave feedback about the application from a different perspective. The question was very easy and received serious and correct responses.

V. Conclusion

Evaluation of any software is very important. It contributes to enhancing its quality. The dashboard is essential for adaptive learning and data processing, ensuring that students and teachers are aware of development through multiple courses, providing overall development of curriculum and learning calendar in curriculum. To train individual schedule every time you sign in to the system. Providing a blue interface allows students to connect frequently used functions, they can help improve the learning experience and put student development, completion and satisfaction first.

A systematic approach for analyzing e-Learning tools, called TICS, was followed. An e-Learning dashboard developed by a post graduate student represented the subject of the case study. After setting a number of evaluative aspects, eLSE method was followed.

In the preparatory phase, we developed a library of ATs which were used next as guidance.

During the execution phase, we evaluated the dashboard according to ATs. We conducted also a questionnaire among real users formed by teachers and students.

The results has shown that the tool is not very easy to use and the services provided are relatively useful but don't cover all expected results.

User support was not enough and the redaction of a user manual will help future users know quickly the tool and use it with less errors. Diversified navigation elements can be added to accelerate the navigation in the application.

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