Students' perception on e-learning: a basis for the development of e-learning framework in higher education institutions

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Students’ perception on e-learning: a basis for the development of e-learning framework in higher education institutions

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Abstract. As learnings styles evolve along with modernizing society, educational technology also expands. A current trend in education brought about by technological advances is the e-learning system where teachers and students can discuss lessons online and exchange learning resources. This study explored on the areas of e-learning and provided a review on current e-learning frameworks from different studies. A recent study of Debattista presented a comprehensive rubric for e-learning and it is adopted by this paper as basis for gathering student expectations, feedback, and problems encountered in e-learning. These rubrics were rated by students according to importance. Statistical findings show a significant difference between ratings of students from public and private institutions. Similarly, there is a significant difference between the ratings of male and female students. The difference might spring from the level of interest of students towards learning as factored in by type of institution and gender. Students’ learning expectations in an e-learning environment were also gathered in this study as a basis for a proposed e-learning framework. All specific standards presented by Debattista were labelled very important by respondents and are therefore adopted into the proposed framework. Along with these rubrics are proposed additional standards that focus on the enrichment of student experience and enhancement of learning. It is still highly recommended that strict and proper implementation of such standards are supervised by concerned administrative departments.

1. Introduction
In this millennial age where learning style has shifted from traditional to a more student-centered learning, e-learning became widely used. Not only does it enhance classroom instruction [1], it has also helped address the problem with conflicting time and distant spaces among teachers and students. Collaboration became possible online that learning is no longer confined in the classroom. Specialized educational software that come in many forms like e-learning [2], 3D virtual lab [3], virtual environment, and mobile games [4] can supplement teaching aids to cater to the different learning styles of students. In its broadest sense, Abbad et al. [5] defined e-learning to mean any learning that is enabled electronically. It was also described by Jethro et al. [6] as a computer assisted learning, and as pedagogy for student-centered and collaborative learning. In some definitions e-learning encompasses more than just the offering of wholly online courses. For instance, Oblinger and Hawkins [7] indicated that e-
learning has transformed from a fully-online course to using technology to deliver part or all of a course independent of permanent time and place. Also, the European Commission [8] describes e-learning as the use of new multimedia technologies and the Internet to increase learning quality by easing access to facilities and services as well as distant exchanges and collaboration. Brown and Voltz [9] presented six elements of e-learning, namely, activity, scenario, feedback, delivery, context and influence. These elements stem from a focus on student experience, while taking into account the broader networks that contribute to and are influenced by that experience.

E-learning provide facilities for sharing of learning resources and easy interaction among learners and teachers. Other e-learning software also provide immediate result on student performance [10] which makes it easier for students to track their progress. Parents could also be invited into the online platform to see their child’s performance. Findings from empirical research by Riasati et al. [11] showed that technology integration in teaching, particularly in language, is advocated for reasons including ‘engagement’, ‘improvement in academic ability’, ‘paradigm shift’, ‘assessment shift’ and ‘collaborative learning enhancement’. However there are some barriers hindering the use of technology. Riasati et al. [11] presented barriers from their literature reviews: ‘lack of accesses’, ‘lack of time’, ‘lack of effective training’, ‘teachers’ attitude’, and ‘students’ attitude’. Aside from these, complexity of e-learning materials may also have effect on student learning especially so that they are presented in diverse designs and features. For example, complex design could distract learners from their focus on lessons. Another factor that could affect effectiveness of an e-learning materials is on how the teacher facilitate learning online. Implementation on the use of these useful materials may still be improved to optimize its use in education. This study focuses on gathering student’s experiences on the use of e-learning. Their personal views on how implementation and use of e-learning materials could be a significant knowledge that will help teachers and also developers enhance its use.

Various frameworks from research studies were presented by authors to propose assessments rubrics for online courses. In an effort to provide a centralized point of reference for educators in the field of e-learning, a synthesized approach from four studies and an in-depth review of literature was presented by Debattista [12]. In his paper, he discussed four frameworks from which he based his proposed comprehensive rubric for instructional design in e-learning, these are, Graham’s [13] Seven Principles for Good Practice in Undergraduate Education, the rubric provided by the Quality Online Course Initiative of the University of Illinois [14], California State University’s Quality Online Learning and Teaching instrument to measure the effectiveness and quality of online courses [15], and University of Malta’s [16] Minimum Standards for Study Units in the VLE. The synthesis of the four rubrics has produced the following comprehensive rubric that covers all the aspects mentioned by the four institutions. Debattista specifies that this comprehensive rubric is not a collation of the four rubrics but a synthesis of the separate approaches that – in the author’s view – reflects the context of e-learning. He presented 10 main standards and specific standards under each. The standards are as follows: Instructional design, Course opening, Assessment of learning, Interaction and community, Instructional resources for teaching and learning, Learner support, Technology design, Course evaluation, Course closing, and Instructional design cycle. The specific standards can be found in Debattista’s paper. This rubric has not been tested in laboratory setting or a real-life scenario. However, since the rubric was a synthesis of both traditional and online frameworks, it was adopted by this study as a reference in assessing e-learning areas. Additional important rubrics were also collected from respondents as basis for the development of an e–learning framework particularly for Higher Educational Institutions (HEI). An overview of the study is illustrated in Figure 1.

![Figure 1. Conceptual Framework of the Study](image)
2. Methodology

This study employed both qualitative and quantitative form of gathering and analysing student perceptions on the implementation and use of e-learning materials. For the respondents of the study, a sample size of 80 students from private and 80 students from public higher educational institutions were randomly selected. A semi-structured questionnaire was prepared based on Debattista’s comprehensive rubric for instructional design in e-learning. In Debattista’s rubric, he presented 10 main standards and each has its specific standards. For simpler terms, the main standards are referred to as ‘e-learning areas’ in this study, while specific standards are sometimes called ‘items’ or ‘rubrics.’ The questionnaire prepared in this study is intended to measure the importance of each of the specific standards of e-learning as perceived by students. The researchers provided descriptions for some standards that are not very much familiar with respondents, such as ‘structure of learning’ which pertains to how lessons are presented. Respondents rated each item using a Likert scale. Open-ended questions were also asked per area to gather as much detail on their perception on e-learning areas. Students were free to indicate other functions and features that they feel are useful to enhance their learning experience in e-learning environment. For easier collection of data, an online form of the survey questionnaire was also prepared and sent to respondents who opted to respond outside the school campus.

Ratings from each of the school categories were collated and presented in a table for easier comparison. Ratings from the Likert scale were summarized for each rubric. A statistical analysis was performed on the data to determine the level of significance of each. Further, t-test was performed to see if there is a significant difference between data from private and public respondents. Gender was also used in determining significant differences with regards to their preferences on the items stated in Debattista’s rubric.

3. Results and Discussion

This study presents students’ perception on each of the 10 main standards presented by Debattista. Rubrics under each area was rated by respondents as they see its importance in learning. Table 1 shows the respondents’ ratings grouped according to type of school, and also according to gender. The overall ratings reflect that all items in Debattista’s rubric is indeed relevant in the development and implementation of an e-learning environment as perceived by students. Mean rating of each is above 4, with openness, resolution and interface having the highest mean of 4.48. This means that respondents believe that technical infrastructure used to deliver the teaching and learning has to be procured and implemented according to open standards and formats that maximise the value for money and the range of options to fulfil the learning outcomes and the academic needs of faculty and learners, which is openness. They also believe it is very important that all pending issues between the instructor and the learners are resolved at the end of the course, referred to as resolution. Interface and navigation in the learning area should be simple enough to be conducive to teaching and learning without the need to possess advanced ICT skills and competences.

| Variable        | Mean | Std. Dev. | df  | t Computed Value | P value | Interpretation |
|-----------------|------|-----------|-----|------------------|---------|----------------|
| **Type of School** |      |           |     |                  |         |                |
| Public          | 4.46 | 0.45      | 158 | 2.15             | 0.03    | Significant    |
| Private         | 4.29 | 0.54      |     |                  |         |                |
| **Gender**      |      |           |     |                  |         |                |
| Male            | 4.26 | 0.58      | 158 | 2.76             | 0.01    | Significant    |
| Female          | 4.48 | 0.40      |     |                  |         |                |

For the testing of hypothesis, t-test was used to analyze gathered data. Statistical analysis of these ratings show SIGNIFICANT DIFFERENCE among the ratings of students from public school and from private school with P value 0.03. A test based on ratings of each gender also shows significant differences with P value 0.01.
It can be noted from Table 1 that the mean ratings from public school respondents is higher than those from private school. This may imply that respondents from public school has higher expectations in e-learning than those from private school. Gender was also used as a factor in determining the level of difference among the responses with regards to Debattista’s rubric. Further, Table 1 shows that female respondents has higher mean than male respondents. These ratings could be influenced by student’s interest in studying and may reflect that female respondents are more serious in their studies even through online platform. Most male respondents admit that they are tempted to play online games when given access to internet before they even access e-learning sites.

3.1 Learning Expectations of Students in e-Learning

E-learning environment has apparently widened the borders of education. Respondents strongly agree that they are able to gain education anywhere at their most convenient time because of this technology, more so with the help of smartphones that made online resources available to users’ fingertips. Collected feedback, expectations and problems encountered by students are discussed per area in this section.

On the area of instructional design, respondents appreciate current lesson presentation where layout is simple, files could be arranged according to lesson sequence and sorted according to type of file (text file, PDF, audio, images, etc.) for easier browsing. Learning objectives and outcomes are sought to be relevant for learning since it directs students’ focus during the learning process.

Course opening covers the role of the teacher in the e-learning environment, the description of the course and behaviour on how it will be utilized. There is, however, lack of student orientation on how to operate the e-learning environment and how it is to be utilized in the duration of the course. For the e-learning system functions and features, students are usually oriented only concerning central modules like learning resources module and assessment module, and the rest is for them to discover. Students expect a run-through of the whole e-learning environment so they can fully utilize it. It then proposed to add orientation as one specific standard under Course Opening. As to the role of the instructor during the learning process, students expect a more descriptive instruction. For example, if they knew information like schedule of giving announcement or posting of new lessons, or even teacher’s schedule for online consultation, they would know when to go online.

With assessment of learning available in e-learning, paperless assessment has become possible. While it is undeniable how e-learning benefits its users in this area, students has mentioned several observations in the implementation process that need improvement. One scenario expressed is that teachers announce requirements or even assessments on the e-learning forum without informing the class during the previous meeting. In this setting, students are not set to accomplish tasks. In other words, assessments should be given at agreed schedules for the students to be prepared whenever assessments are made. Another is with regards to narrative assessments where some teachers do not provide their rubric for grading answers. Transparency in this case will prevent conflicts that may arise and will allow the students to accomplish the assessment strategically. Rubrics for grading should then be included under this standard. Moreover, scores for narrative assessments are seldom disseminated unlike multiple choice assessments. Along with assessment results, teachers should find time to discuss answers to the assessment given so that students will learn from their mistakes.

Interaction and community provided by e-learning environment allows communication between instructor and learners. Respondents recommend a real-time interaction like a chat-box between student and teacher for a faster consultation. And when teacher is offline, teacher should be notified via sms.

The exchange of instructional resources for teaching and learning is a vital function of e-learning. Students feel relieved from the burden of carrying too much books and photocopying documents. There was a minimal concern on this area. With the numerous available online resources that can be linked as learning resources, students expect that relevant sections in these resources are identified by the teacher so they would know where to focus when reading. Too much resources could distract learners from focus, and they lose interest even before getting to the main text. Along with this, respondents find it crucial that learning resources are up-to-date and relevant to the course, to ensure validity of learning.
contents. Dynamic content also caters to different types of learners. A combination of text, images, audio and videos can meet the varying learning preferences of students.

To help learners achieve their full potential, learner support must be available. New users expect to find frequently-asked-questions page and forums where they could read seek answers on their own. For further assistance, respondents suggested a separate help desk or an offline support that could be reached via sms or call. This is for technical problems where user is unable to login into the systems. For students who live in the areas with poor internet connection, offline communication is a good alternative in getting their concerns addressed.

Technology design should support the achievement of the aims and objectives of the instructor and the learning outcomes for learners. The current e-learning design is generally acceptable to respondents. The separate module for learning resources are helpful in organizing their files into folders. However, few respondents say they are annoyed by the long tail of button that pop out after the other. While this is a design intended to categorize contents, too much specifications can be strenuous on users. Respondents suggest a search box for keywords that would lead them to the specific page they seek instead of browsing through buttons. Additionally, the interface design should be user-friendly across all the available platform, especially for smartphone that has limited view. A mobile app version of the e-learning materials that could be accessed offline could foster easy-access and portability that come handy for students who live off-campus. Since e-learning is deployed online, administration should support the provision of wifi connectivity in student lounges. Student often encounter administrative excuses such as lack of funding when requesting for such.

At the end of the course, students expect to provide a course evaluation where they give feedback on the whole learning experience. Some e-learning materials do not provide this feature. For those that do have this, the course evaluation entail too much questions that become exhausting to answer. Respondents suggest a more concise form of evaluation and easier scheme to answer like simply clicking on options or rating scale for satisfaction rating. This would make the course evaluation easy to accomplish and would encourage more accurate answers. Student who give their honest feedback and constructive comments also expect their evaluation to be forwarded to the concerns administrative departments for proper action. Suggestions that only require a few days to integrate are expected to be implemented in time for the succeeding semester.

Course closing includes assessment, resolution, and archiving. Student expect to see their grades at the end of the course as they are highly concerned with their performance. This will provide transparency on their class performance like assessment scores, missed requirements, and other details. An alternative option is for their performance report to be emailed directly to them.

Instructional design cycle is more of an administrative responsibility. Although the students do not see this part of the e-learning platform, they rated the specific standards of this area as very important. They appreciate the relevance of this practice where the quality of the e-learning system is maintained and improved. Respondents suggest a regular review of the e-learning system, at least every semester, when feedback on the course are still fresh (frequency). Administrative duty of supervising the utilization of e-learning makes sure that learning resources are regularly updated by teachers.

3.2 Proposed e-Learning Framework based on Learning Expectations

A summary of proposed additional specific standards to Debattista’s comprehensive rubric based on student learning expectations is shown in Figure 2. All specific standards presented by Debattista is proven to be relevant in e-learning as perceived by students. They are therefore fully accepted by this paper and are adopted into the proposed e-learning framework.

There are 8 additional specific standards proposed in this framework. First, under Course Opening, there is a need for student orientation since students claim they lack knowledge on how to operate the e-learning environment. This basic knowledge could help them fully benefit from the features of the system. Second, under Assessment of Learning, students need to know the rubrics for grading their answers. This will guide them on their approach in answering especially for narrative assessments. Third, under Interaction and Community, students assert that a real-time interaction facility like a chat-
A box could get their concerns addressed immediately. Fourth, under Instructional Resources, instructional materials’ *validity* needs to be ensured for an updated learning content. Fifth, under Instructional Design Cycle, *frequency* refers to the number of times that a review is conducted on the e-learning design and content. Students believe there should be a regular session set by concerned administrative departments to review the course content. Sixth, under Course Evaluation, proper *implementation* is expected by students, whereby their feedback on the e-learning course experience could actually be considered by the institution in improving their e-learning system. Seventh, an *offline version* of the e-learning system could cater to students who have little access to the internet. A mobile app that could be accessed even offline could later be synchronized to the online version for necessary updates. Finally, *offline support* like sms and phone call are viewed by students as a very convenient means to reach for help.

![Figure 2. Proposed e-Learning Framework](image)

**4. Conclusion and Recommendation**

Areas of e-learning environment are relevant for teaching and learning. Debattista’s specific standards are highly accepted by students as relevant factors to be considered in the development and implementation of e-learning environment. They are therefore fully accepted by this paper and are adopted into the proposed e-learning framework. Students’ learning expectations in an e-learning environment were also gathered in this study. Out from these expectations, several standards are proposed. These standards focus on the enrichment of student experience and enhancement of learning. It is still highly recommended that strict and proper implementation of such standards are supervised by concerned administrative departments.

Finally, statistical analysis on respondent ratings shows a significant difference between ratings from public and private institutions. Students of public institutions show higher expectations on e-learning than students from private institutions. Moreover, there is a significant difference between ratings of male and female students which may be due to respondents’ attitude toward learning when devices are involved.

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