

# Designing an Online Interface Platform for Distance Education: Redefining Efficiency and Interactivity

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**Abstract:** An informal focused group discussion by tertiary-level educators, a computer programmer and graduate students on the various issues surrounding the effectiveness of online education platforms elicited ideas that conceptualized the design of a software interface that can be the standard of future developments in the field of online education. It was further refined by the researcher through a series of heuristic inquiries and after studying existing platforms in the web. The functionality of the design was then shown and explained to teacher respondents who valued its user-friendliness and potential in delivering graduate distance education. Moreover, it was felt that it also supported an environment where student-teacher interactions are actively carried out. It thus filled established gaps in online learning such as the lack of interactivity, social connectedness, and teacher presence.

**Keywords:** online learning, educational technology, distance education, eLearning platform.

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## 1. INTRODUCTION

E-Learning has long been established as a unique discipline in the field of education. It is delivered in various modes such as web-facilitated learning, blended learning, multimedia learning, computer-assisted learning, and online learning (Allen & Seaman, 2007; Graham, 2006; The Sloan Consortium, 2008). It is thus defined as a general term, which is the use of computer and the internet in delivering education. Zhang (2013) identified the various developmental stages of e-learning from 1<sup>st</sup> generation to 3<sup>rd</sup> generation. First generation eLearning which started in the 90s is a one-way technologically driven system where knowledge is simply delivered from the teacher to the student using technology via the internet, CDs, and other media. This was improved in the second generation eLearning where some form of interaction was embedded in the creation of the educational package. Instructional designs allowed students to interact with the learning content when guided by outcome-based objectives. Second generation e-learning thus, focused on pedagogical aspects, giving way to interaction that is absent in 1<sup>st</sup> generation eLearning. In the creation of what is now referred to as 3<sup>rd</sup> generation eLearning, there is a need to include the design and development of eLearning courses as well as eLearning platforms, use of open educational resources, student support services, educational management, tutoring, application of multimedia learning principles and methods, and evaluation and quality assurance. In short, third generation eLearning is the most comprehensive mode of eLearning. Zhang and Wang (2005) examined 17 eLearning platforms and classified their functions into four categories: (a) course content, (b) communication and collaboration, (c) course management, and (d) administrative functions. These platforms however belong to both 1<sup>st</sup> and 2<sup>nd</sup> generation e-learning. Third generation eLearning platforms must overcome the shortcomings of the 1<sup>st</sup> and 2<sup>nd</sup> generation platforms by extending these functions to six categories, adding (e) learning functions, and (f) evaluation functions.

This paper focused on designing an online learning platform using the existing preconceptions of teachers and graduate students as to how distance education should be delivered using the computer and the internet. Using Zhang's (2013) framework on 3<sup>rd</sup> Generation eLearning platforms, the design was guided by "what the teacher can do" as well as "what the students can do" using the platform. The IT expert ensured the feasibility of every feature in the proposed design. The researcher further refined it by trying to provide solutions to common problems encountered by users of popular online

learning platforms currently found in the web. An enhanced interactivity and efficiency also needs to be ensured in the design. It is on this light that this qualitative study was carried out.

## 2. METHODOLOGY

This study was done in the context of the Constructionist epistemology. This assumes that knowledge is generated from an interaction between the experiences and ideas of teachers, students, educators and IT specialists. It is thus expected that multiple, even contradictory but equally valid conceptions of an efficient and interactive eLearning platform was elicited as the participants of this study construct their own meaning in different ways. The researcher blended interpretivist approaches such as symbolic interactionism, heuristic analysis and phenomenology to guide the analysis of grounded data from focused group discussions and individual insights. Two graduate students who are also college teachers, a high school teacher, a computer programmer and the researcher himself participated in a focused group discussion. The primary objective was set on deliberating various issues surrounding existing online learning platforms. The group identified all the essential functions both the teacher and the student must be able to perform in an eLearning platform. Enhanced efficiency and interactivity was given attention in conceptualizing the design. It was then shown to an additional 3 graduate students for critiquing and further suggestions. Qualitative data was summarized into the final design for a student platform and a teacher platform. The researcher did some housekeeping work by studying existing online platforms to detect common shortcomings that need improvement and inclusion in the proposed design.

## 3. RESULTS

### Relevant Issues Observed and Resolved:

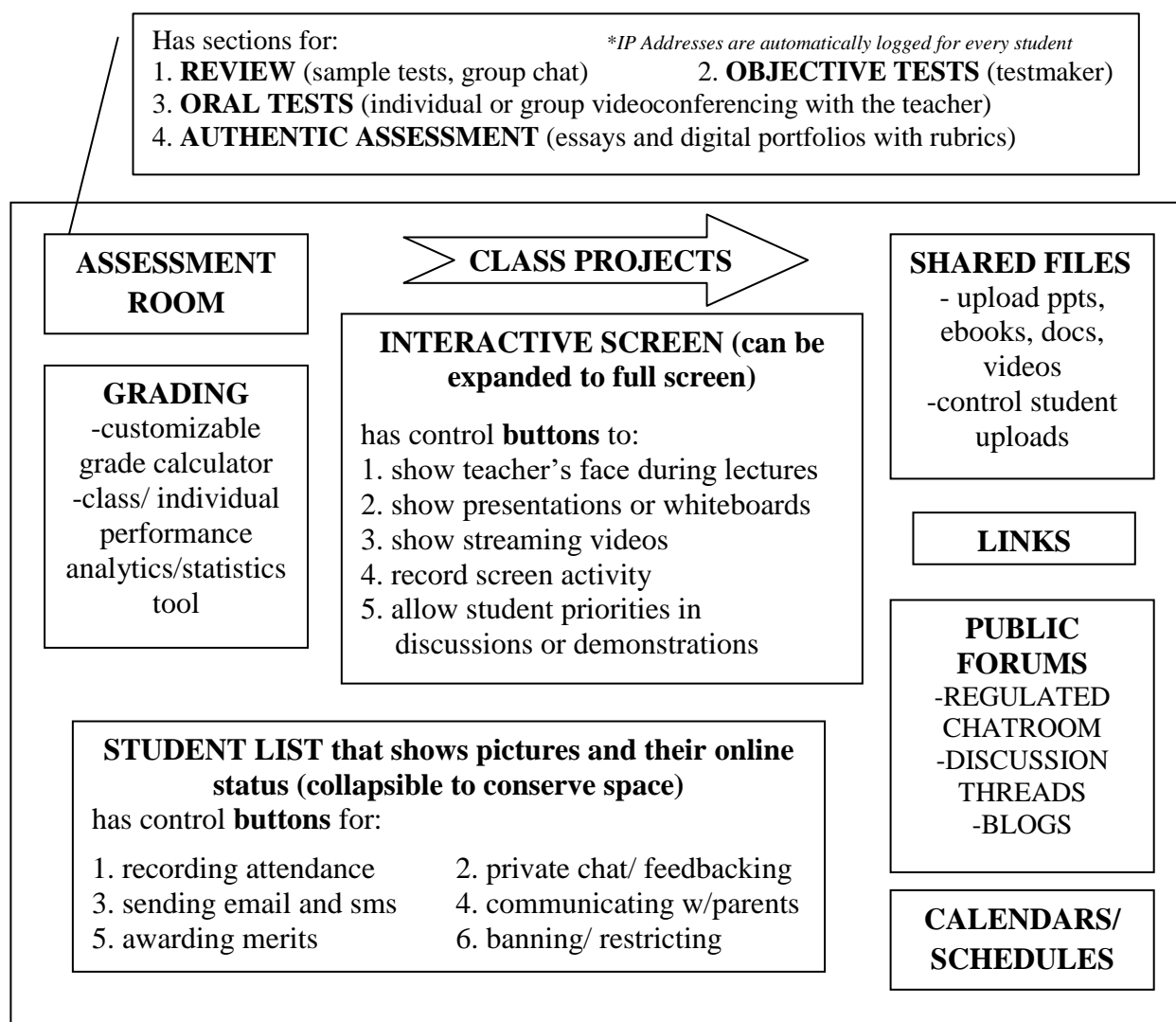
As agreed upon by the participants of the focused group discussion, the following table shows the capabilities for both the teacher and the student that must be present in an eLearning platform.

**Table.1: Summary of the FGD transcript as to the various functions an eLearning platform can offer to both students and teachers.**

<b>Teachers can</b>	<ol style="list-style-type: none"> <li>1. do real time teaching using a camera, a pen tablet, and a microphone which can be recorded as a video file.</li> <li>2. upload learning materials such as PowerPoint presentations, documents, eBooks and video clips.</li> <li>3. insert links to useful websites or video sharing sites like YouTube.</li> <li>4. set up an assessment page for quizzes, test banks, essays and portfolios.</li> <li>5. use an electronic grade calculator and other mechanisms for grading including rubrics if applicable.</li> <li>6. produce descriptive statistics of student performance in the form of graphs and charts.</li> <li>7. schedule classes, post announcements, discussion threads, forums and blogs.</li> <li>8. award merit points and badges to performing students or ban or restrict students showing unwanted online behavior.</li> <li>9. use an anti-plagiarism tool.</li> <li>10. communicate with individual students and provide feedback of their performance.</li> <li>11. inform parents of their child's progress and activities.</li> <li>12. start a real-time public or private chat that can be regulated by the teacher.</li> <li>13. can send text messages and emails to students who are away from the computer.</li> <li>14. organize a workshop activity or a project where students can collaborate both online and offline.</li> <li>15. create a review corner where students can enter and discuss real time before taking a major exam. Review tests can also be inserted here.</li> </ol>
<b>Students can</b>	<ol style="list-style-type: none"> <li>1. participate in real time class discussions using priority buttons regulated by the teacher.</li> <li>2. take down electronic notes or discuss with classmates during a lecture session.</li> <li>3. download or share learning materials that might be useful for the class.</li> <li>4. access the review corner and undergo assessments when ready.</li> <li>5. communicate both privately and publicly with teacher and classmates via email, discussion forums, and chatboxes.</li> <li>6. post links to relevant websites, blogs, and discussion threads.</li> <li>7. evaluate teacher performance, send anonymous constructive feedbacks, or express grievances.</li> <li>8. view individual performance relative to the class.</li> </ol>

	<ol style="list-style-type: none"> <li>9. collaborate with other students in a project or a class activity.</li> <li>10. submit assignments and manage digital portfolios.</li> <li>11. use a built-in search tool.</li> <li>12. post e-learning activity in social media such as Facebook and Twitter.</li> <li>13. personalize account settings.</li> <li>14. evaluate peers especially in collaborative work.</li> <li>15. have fun with built-in educational and mind stimulating games.</li> </ol>
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The final lay-out of the design for both the teacher and student platform is shown in Figure 1 and Figure 2 below. The IT expert validated the feasibility of developing the design into a real functional software or web application. He noted however that it would take a team of programmers and web designers to work out each of the features in the design. It would also be wise to use existing propriety platforms and merge it with the current design to improve its versatility. This would cost some money but there is more to gain in the creation of an ultimate eLearning platform in the near future. The task is also tedious as the prototype needs to be tested several times in a variety of conditions and operating systems to ensure efficiency.



**Figure.1: Framework for the Teacher Platform Design**

It should be noted that all capabilities are presented in a single interface for simplicity. There were previous suggestions on compartmentalizing the functions as separate rooms (eg, classroom, testing room, fun room, chat room) but it was felt that it will limit multitasking. Each of the features can be accessed as a separate window and the teacher has the option to show or hide these features to his/her convenience. The interactive screen will be the primary window for live content delivery. The assessment room contains test maker and rubric creator tools for teachers. This is where the teacher can

create assessment forms for students to complete. The grading section has tools for translating student performance into numerical grades. The teacher can also generate useful graphical and statistical outputs of student performance individually or relative to the class. The student list has a variety of options that allow the teacher to regulate, communicate, interact, and give feedback to the students. Announcements, schedules, and calendar of activities also have its own separate section. It is also equipped with notification tools that will instantly alert or remind all involved individuals in a particular event or activity. One important feature of Public Forums is the regulated chat. The teacher can choose to automatically set the time delay for every chat entry so that there is enough time to read every message before another message pile up against another. Manually, the teacher can set permissions by allowing or denying a chat entry. The links section is also open to students but it is the teacher who will approve whether these are posted or not. The same applies to shared files. The teacher primarily uploads the files needed by the class but the student is also allowed upon teacher approval. Collaborative activities are organized as class projects.

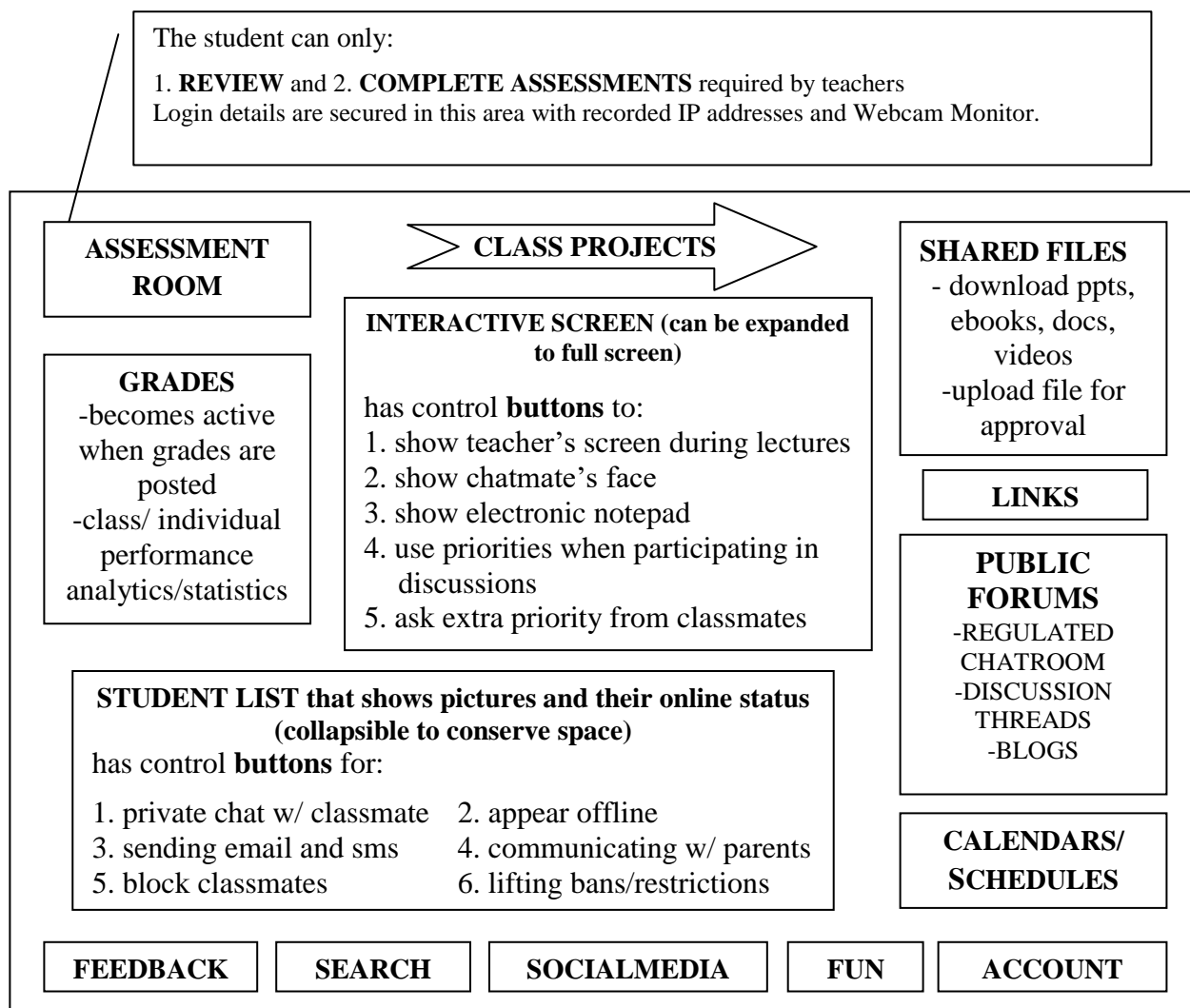


Figure.2: Framework for the Student Platform Design

The student platform has features that are synchronized with those found in the teacher platform such as assessment rooms, class lists, calendars/ schedules, public forums, links, shared files, class projects, and of course the interactive screen. After close examination however, they differ in how the controls and functions are being carried out. Additional feedback features allow students to rate their teacher, greet them on special occasions, express grievances, and report abuse or non-cooperation by group mates in collaborative activities. A built-in search tool comes in handy to search for needed files within the platform or to go directly to search engines. Students can also post their activities in various social media sites. They can also choose to leave an active lecture discussion if they opt to relax their minds and play educational and mind stimulating games. Student accounts can be personalized with a security feature both for login and management applications.

The platforms were limited only to both the students and the teachers. It was a general consensus that an administrator platform and a parent platform must also be created. Due to time constraints and lack of adequate informants coming from the educational management sector and private clients, these were reserved as follow-up studies.

#### 4. DISCUSSION

The primary focus of this paper is not technology but on the consideration of design principles that is already innate in every educational system whether traditional or electronic. E-learning platforms must meet the needs of daily work of teaching and management (Chen, 2009). In more than 2 decades of research and development, eLearning systems also became increasingly complicated. There is a need to re-examine our conceptions of the ultimate ends of education and provide simple but efficient means of delivering it using advanced technology. A variety of literature (eg. Tutty and Klein, 2008; Julian, 2009; Ya Ni, 2013; Ginn and Hammond, 2012) tried to establish the real score between online and offline learning. It has long been implicated in literature that nothing can beat traditional education with its characteristic features of social-connectedness, teacher presence, and realistic settings. Maybe, plenty of researchers have been too conservative and emotional with this as well as the multitude of respondents in these studies. At this point, it is safe to hypothesize that the ultimate eLearning platform was not yet created. We owe all those research results condemning the various shortcomings of existing e-learning systems to our neglect of minimalistic approaches- in all those years of trying to figure out things, researchers and designers were overwhelmed by the explosion of educational technology. Educators and IT experts recognize the huge potential benefits of eLearning but much to their disappointment, it seemed to have not lived up to the hype. These have led educators and learners to conclude that the inconvenience of electronic learning outweigh its advantages.

In this paper, pragmatic approaches tried to integrate the common strategies that will make eLearning mimic traditional teaching, learning, and management. Thus, the basic needs of both the teacher and the student for a meaningful interaction to proceed smoothly were laid down. In the Philippine setting, we certainly do not have a choice but to have a minimalist perspective especially in the field of eLearning. The focused group discussion exhausted all the possibilities as to both student and teacher's needs and responsibilities in a traditional educational system. This will simply be re programmed in an eLearning platform design. From the results of this study, we can first look at the basic principle of User Friendliness that is a must for every electronic system. In terms of ease of use, the conceptualized design of both platforms provide a consistent interface that is customizable, where you can navigate to required content when needed, communicate to users, track and evaluate performance- in fact everyone who knows how to click with a mouse can really start using the platform. In terms of accessibility, perhaps, it was missed by the designers because it was not meant for people with disabilities. It will be a special case and will be considered in future improvements of the design. Flexibility-wise, it does not dictate how users must function. Instead it offers freedom for example, in the teacher platform, the teacher can do whatever he or she wants, from choosing what to show in the interactive screen, to the type of assessments he will create, to rewarding or banning and restricting students, including the freedom to choose the learning material and educational links given to students. On the other hand, students are also free to decide whether they engage in the learning process by subscribing to teacher activities and instructions or simply waste their time away in the gaming section, private chatting, or out of the topic forum discussions- they can even draw funny faces in their electronic notes as nobody will care. It should also be noted that the features are quite independent of each other- a concept of being "standalone." This will ensure architectural integrity in terms of future developments because, modifying one feature will not affect another. As to backwards-compatibility, it is not yet considered at this time because this is more of a functional design. It would also be able to support the reusability of learning objects including access to related links in the worldwide web of endless possibilities.

By upgrading our layman-oriented discussion in the previous paragraph, we can organize the functionality of the design using a logical framework. In this discussion, it is hard to cite supporting literature as they all seem to refer to the redundant stereotype image of eLearning. Another consideration for the development of the design is the possibility of using this platform in the delivery of graduate distance education programs here in the Philippines to replace the obsolete Modular Systems. We are again limited to adult learners and higher education teachers and educators in this discussion.

From the standpoint of the previously-mentioned design parameters and the concept of third generation eLearning by Zhang (2013), how do we visualize a real-world eLearning platform? First we start a platform with a single common access point or portal allowing all users to navigate and reach relevant controls and content. In the above design, the said access point can be installed on a computer system as standalone software or integrated to a web browser as an add-on. If we are to develop a non-commercialized system, the teacher will just install the teacher platform in his/her computer while the students do the same in their computers and they are all good to go. In the case where a system wide

deployment is needed, a powerful server can be utilized. Management platforms are then integrated to secure essential aspects such as student fees, personnel honoraria, trainings, research and development, etc. Secondly, we consider common services that everyone needs especially those that are independent of interactive pedagogies. This can include user management functions such as personalized accounts, tracking IP addresses, synchronized interfaces, logging class attendance, assignment of privileges, and user activity regulation as in file sharing and public chats. Thirdly, collaboration must be encouraged by the platform. It means, communication must be kept open between all users. This fosters higher-ordered thinking by allowing collaborators to immediately start with “Synthesis-“the highest cognitive domain. Fourth, event management in the form of calendars and scheduling will keep users updated and prompt in the completion of their responsibilities. Notification systems like instant SMS and emails are included in the design. Lastly, the core functionality in the form of teaching and learning services must be put on stable ground. In this study, only the design of the eLearning platform was the focus. The design of eLearning courses is equally important to match the effectiveness of the platform. Obviously, it will be a separate and tedious study. Going back to the platform design, it should permit utmost flexibility in the packaging, delivery and presentation of content, the holistic evaluation of student performance, and the integration of user records into feedback mechanisms that foster user self regulation.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The synthesis of this qualitative work using grounded data paved the way into looking at designing eLearning systems using efficiency, interactivity, and simplicity as a guide. There are many things to look into after this revolutionary attempt of reorienting the research possibilities in eLearning platform design. From the culturally-based perspectives of Filipino educators and professionals, the two platform designs created was perceived as user-friendly, efficient, and offers better control and management capabilities. If graduate education programs here in the Philippines are delivered via this eLearning platform, it would be a great leap in educational technology in a developing country. It is greatly recommended that Philippine SUCs start to revive their future plans of developing eLearning systems. The platform design conceptualized by this study was only a product of a simple focused group discussion. It is apparent, that there is more to achieve if all the active stakeholders in our ailing educational system participate in creating and developing something revolutionary especially in the field of eLearning where, the ultimate platform is yet to be developed.

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