

# An Opinion Survey on User Interface Design of Web Learning System

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## Abstract:

**T**he aim of this research paper is to study the user interface design of web learning system. This paper also analyzes the opinion of the users to improve the current web learning system. There are many web learning portals are available to the learners with and without pay and learn option. But the user interface design of the web learning system has no specific standards. There are many possibilities to improve the current system. User generated content is a new area to explore and study. The users of the system can give an opinion and also able to modify some design aspects according to their preferences and likes. In this research paper, we have studied two different web learning systems and its design aspects. Cognitive aspects and the flexibility of the design plays a very important role in learning. Cloud sharing and downloading time play a very vital role in learners' preferences. Many free course learners withdraw learning modules due to the pure connectivity from the cloud learning environment. Web design principles, color principles, basic design principles and user interface design considerations should be studied and applied to create a well-constructed user-friendly environment. User generated and user participated design plays a very important role in the effectiveness of learning.

**Keywords:** User Interface Design, Web Learning System, Web portals, User Generated content, User Preferences, Cloud learning, Web learning, Design principles, etc.

## I. INTRODUCTION

User interface design based on the opinion of learners' and their preferences is an innovative area to study. Current existing web learning system has certain limitations and restrictions on learner's potentials for learning. There is a great need for innovative learning methods, in education to reach education to all, even though there is globalization. The number of Information and communication tools such as WhatsApp, twitter, facebook, web learning system, mobile applications, etc. is ever increasing and it is important to give quality education by implementing various innovation activities. Mobile learning adopted environment is an example for this. All the existing educational systems created by educators can be improved and altered further to enhance the performance of the learners. It is very important to make appropriate changes in the learning system and educational field to cope up with the ever changing knowledge as a result of technological and scientific advancements. In an information society, the main task of education is to keep pace with this development in globalization. Due to the vocationalisation of education, it requires new approaches to teaching and learning process. Unless educators are trained in the new methods of learning and teaching, the learners in higher education will not be able to get the skills needed for the new information society. Web learning system is a novel idea in providing life-long education. Those who unable to get an education in higher educational institutions, those have financial problems to continue the studies and work a part time job could fulfill their educational wishes of gaining a regular degree or post graduate degree through web learning system and online programs

### 1.2 Web design principles

Website creating, maintaining, designing, etc, needs creativity. A good learning website must be constructed with flexible design elements. It should be friendly to the learning process. The visual elements should be placed in the appropriate area, in order to facilitate the learning activities. Web learning system should be developed by anyone who has the required skills in fields such as design, computer science, fine arts, etc. The functionality of the website is very important. Visual appeal and the visual appearance is also important. Google analytics metrics are useful to find out the performance of the website and its functionality. The overall design, color harmony, readability, typography, visual appearance, visual balance, communication quality, Navigations, Links, readable patterns, compatibility to mobile devices, good layout, loading time, etc. are very useful to find the usability of the web learning system.

### 1.3 User interface design principles

Accessibility, control, directness, Efficiency, familiarity, flexibility, friendliness, immersion, obviousness, operability, perceptibility, visibility, etc, are the basic principles of user interface design. Human behavior profiling is very complex. By studying the opinion of the users, user interface designers can able to design and change the visual

placements. Usability testing is an important area in the process of UID. Usability of the overall system includes learnability, memorability, efficiency, effectiveness, error tolerance, friendliness, engagements, satisfaction, etc.

**Design principles:** Basic design principles such as composition, unity, balance, color combinations, rhythm, sequence, variance, etc, should be carefully followed to create an attractive flexible learning environment.

**User generated design:** Web 2.0 ID model was created by Tutty and martin in 2003 to include the users/ learners in the design process. The learners/users collaborated in the initial phase, designing phase and the evaluation phase to create a flexible learning environment. In the user-generated design process, the end users' role changed to the designer.

## II. REVIEW OF LITERATURE

According to Galitz, "user interface design is a subset study in the field of human-computer interaction. Human-computer interaction is a field of communication study which deals the concepts of human and computer work together in a common interface. It mainly concentrates the effective way of interactivity from human to computers. Human-computer interaction study deals with the human limitations, perceptual capabilities, expectations, needs, cognitive aspects, hardware and software requirements, etc [1]. According to a study by ceaparu 2004, 40% of computer time is used to solve the problems such as virus removal, installations, troubleshooting, etc.in a human computer interaction. Study about the human characteristics, human-computer interaction limitations, human's knowledge and skills, cognitive aspects, individual differences, psychological and physiological limitations, capabilities, User needs, expectation, tasks, etc. plays a vital role in designing process [2].

Shneiderman conducted research in the area of high-quality user interface design based on human-computer interaction in interactive systems He studied the learners with computer science backgrounds in 2010 [3]. Norman (1998) developed seven principles for better user-centered design. They were appropriate graphic placements, allowing human errors, more flexibility without constraints, plan before constructing the user interface design, simplify the tasks for better memory, the easy perception of visuals and links, etc [4]. Endsley (2016) discussed various complexity such as system complexity, operational complexity, cognitive complexity, task complexity, display complexity, etc. in user-centered design. [5]. Gulliksen 2003 proposed twelve principles for user-centered system design which included.

User generated products are better in performance than the designer-generated products [6]. This comparative study and idea were studied by the Nishikawa in 2013. In his research paper "User generated vs designer generated products-a performance study" the research scholar clearly found out the advancement of user generated products [7]. According to Berg-Jensen et al, there are possibilities to enhance the web 2.0 environment based on the end users' design preferences. They forecast the new design idea based on the web 2.0 communities design preferences [8]. According to Saed, loading time of the website determines the attitude of the learners to study further and stop to search. They studied the loading time differences in the Malaysian examination syndicate web portals [9]. User generated content is a new area to explore. So far there has no systematic user generated content and design studies are conducted among the learners.

The difficulty is the end users/learners are diverse in nature with various backgrounds. They can also express ideas freely without any similarities. Finding the similar design aspects is difficult. Customer/learner/user preference models can be used to design the user interface in a systematic way. An opinion survey is also useful to construct the enhanced learning environment.[10]. According to Jayasimman, enhancing web learning system is possible through new classification algorithms based on human preferences and weblogs [11]. According to Liu, online reviews are very important type user generated content which contains the details related to user experience, user preferences, user profiles, user demographic data, etc [12]. There are many questionnaires are available to study the user experience in the web learning environments. Nielson's attribute questionnaire, heuristic questionnaire, User experience questionnaire-QUIS, computer system usability questionnaire-CSUQ, USE questionnaire, ASQ-After scenario questionnaire, PUTQ, etc.[13]. According to chi cheng 2001, used a well-constructed questionnaire to check the basic four WLSP functionality. They were system functionality, interface, system use, learning outcome, etc. He also studied the effectiveness of the web-based learning portfolio in the learning environment [14].

## III. OBJECTIVES

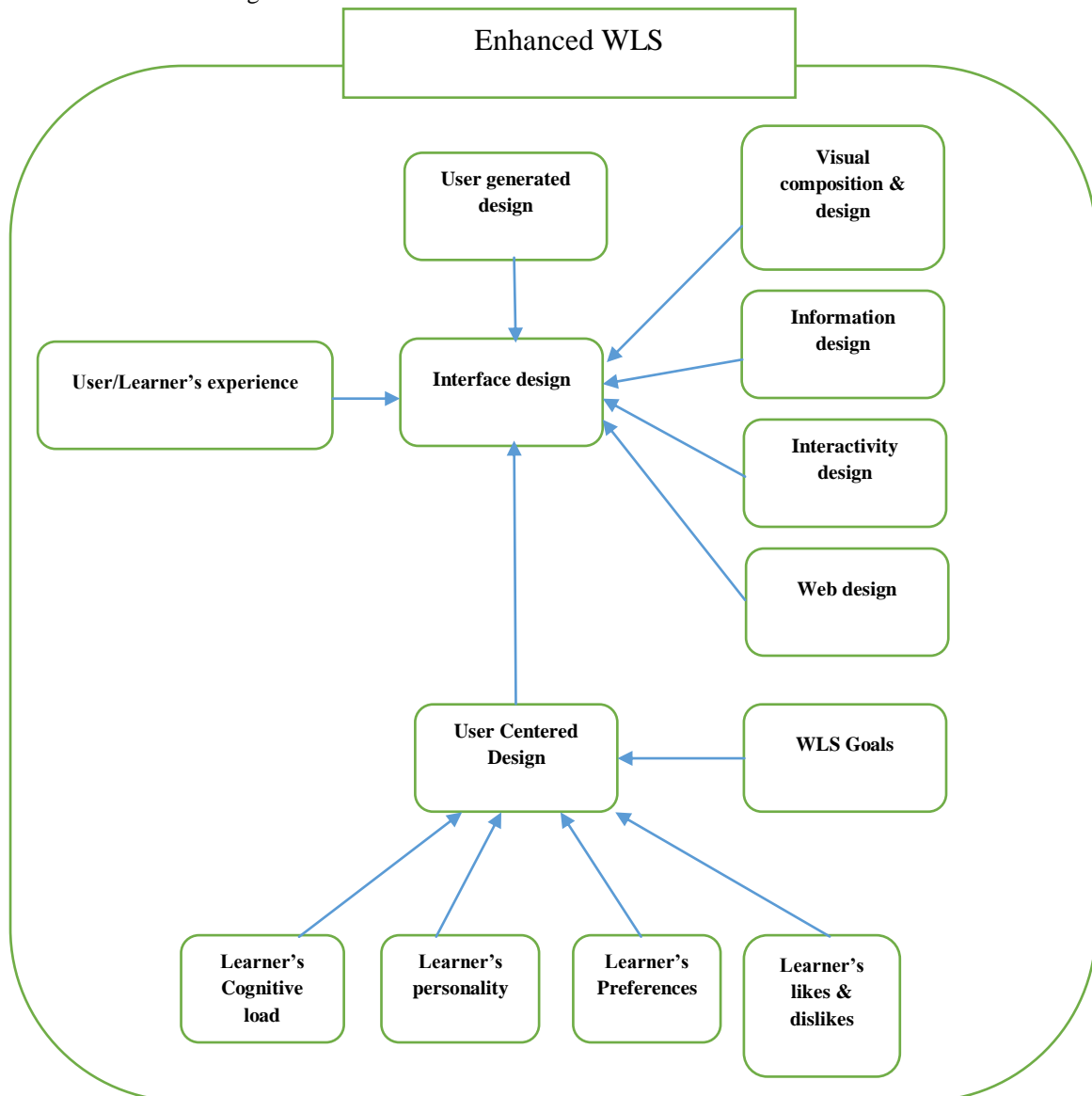
- ❖ To study about Web learning system
- ❖ To compare the visual details about the existing web environment.
- ❖ To enhance the web learning system using opinions.
- ❖ To study the loading time and its causes in the learning process.
- ❖ To study about the inclusions of multimedia tools to enhance the current system.

## IV. HYPOTHESIS

1. There is a significant association between web learning systems' design and visual composition.
2. There is a significant association between prior computer knowledge of the learners and opinions of the learners.
3. There is a significant association between educational level of the learners and opinions of the learners.
4. There is a significant association between the design of the web learning system and satisfaction of the learners.
5. There is a significant association between loading time and user satisfaction.
6. There is a significant association between performance of the learners and user-friendly environment.
7. There is a significant association between the feature of the website and personality differences.

## V. RESEARCH DESIGN

This study focuses the opinion of the learners and their satisfaction level in the different web learning system environment which is important to construct a good and flexible web learning system. So opinion survey was conducted. User interface design aspects, user experience, user satisfaction, user performance and visual placements, links, loading time, etc were studied from the gathered data.



## VI. SAMPLING

The primary data of this research study consists of 50 MLSx web learners and 50 ELSy learners from the newly created web learning environment. Opinion and satisfaction survey was conducted among the learners to compare the effectiveness of the learning environment.

## VII. TOOLS OF DATA COLLECTION

The well-constructed questionnaire was given to the respondents to collect the feedbacks and opinions of the users. It included the data like computer awareness level, educational background, user satisfaction-related questions, perception and attention of the visual elements present in the screen, learners cognitive perception related questionnaire. The performance of the learners was also checked with different parameters and its associations. A pre-test was conducted to check the validity and relevance of the questionnaire. Five points Likert scale was used to find the satisfaction level among the learners.

## VIII. SCOPE OF THE STUDY

Human-computer interaction is innovative area to study further. There are always possible to develop the current web learning system based on the individual differences among the learners. By recommending an individual system based on the user generated content and re content design process current system can be enhanced. The present opinion study has suggests many improvements in the current web learning system based on the web design principles, user interface design principles, design principles, user opinions, etc.

### **IX. FINDINGS OF THE STUDY**

1. More than seventy percent (72 %) of the respondents had prior e-learning experience.
2. The majority of the respondents (90 %) were under the age of 30.
3. Nearly fifty percent of the learners (48 %) gave suggestions to improve the system in design aspects.
4. More than sixty percent (63 %) respondents agree on the association between the loading time and course continuation in the environment.
5. The majority of the respondents (98 %) had the basic computer operation skills to study in the learning environment.
6. The majority of the respondents (90 %) completed at least one free e-learning course from the web portals.
7. The majority of the respondents (76 %) favored lighter colors and its combinations. They also liked light background with dark letters.
8. Web learning system x had better design and better color combinations, links, menus, loading time than ELSy.
9. Even though both systems is designed to attract and to serve the learners, the WLSx system is constructed with the help and suggestions of the users.

### **X. LIMITATION OF THE STUDY**

This research paper studies the two existing web learning system named MLSx (Multimedia Learning system x), ELSy (E-Learning system y). There are many web learning portals are available to study further. Moreover, every day new changes are implemented in the field of human-computer interaction. The opinion of the users may vary according to the geographical and cultural differences among the user groups. Visual knowledge, technical knowledge, users' level of technical understanding, etc varies from place to place. All the limitations related to the human characteristics cultural differences are applicable to this research paper.

### **XI. SUGGESTIONS**

- ❖ Web Learning System should be flexible and friendly in order to reach the online learners.
- ❖ The principles related to basic visual design, web design, user interface design, screen design should be followed to create a user-friendly environment.
- ❖ Human characteristics are always changing according to the technological and psychological changes so user generated content based on the interest, expectations, and needs of the user should be considered while designing the overall content.
- ❖ Majority of the learners suggest the user generated content (Color changes, design elements' placements, working space, links' placements, interactivity, etc.)

Loading time is very important in free online courses. Because many learners are dropping courses due to the slower net connections and complex links.

### **XII. CONCLUSION**

This opinion survey concludes that the well-constructed web learning system is very effective to learn. Those who have prior experience in e-learning courses have a better understanding of the environment which leads to effective learning. Computer knowledge and flexibility of the system plays a vital role in the learning process. Even though the system has a good design as; pets, if the loading time is slow with interruption, the respondents won't like to study further. Loading time and barriers in the system change the attitude of the learners to continue their study. Visual composition and interactivity also play a role in effective learning. In this research, user-generated design a new design approach is discussed. Users/learners can also participate from the design stage to execution stage to develop the user-friendly environment. If the learners are participated along with the designers, the web learning system would serve better to the learning community. User-generated or user participated design is good and effective to enhance the performance of the users/learners.

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