Improving computer science and software engineering education in cyberlearning environments through understanding UI and UX design *

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Abstract

In our day and age cyberlearning for computer science and software engineering education has become more popular than ever. The article will be about how understanding UI and UX design principles can serve as a basis for future improvements in teaching these fields. My goal is to understand UI/UX design techniques to be able to identify the problems with currently implemented cyberlearning environment designs. The identified problems then could be used to improve already existing environments. Knowledge of these problems would be greatly beneficial in the design and development of new, learning focused, student oriented cyberlearning environments for computer science (CS) and software engineering (SE) students.

1 Introduction

We speak about distance learning from around two centuries ago [5], but only now it is becoming a necessity rather than an option. Especially now in the middle of a pandemic, use of online education environments is more needed than ever. This article will focus on online cyberlearning environments mainly designed for computer science and software engineer students.

Design of the environment has a very big role in the effectiveness and in its ability to properly convey information. [1] About the most common problems with the currently running cyberlearning environment (CLE) designs I will talk about more in the following section *section num*. The used methods which will be explored more in section *put section number here*.

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2 Definitions

2.1 Cyberlearning

For cyberlearning I will use the definition by National Science Foundation: "the use of networked computing and communications technologies to support learning" [2] Cyberlearning itself can be form of distance learning, but its main focus is building an all encompassing online environment which can motivate, inspire and and teach students using computer systems and networking technologies as primary tools. [1] Primary goal of cyberlearning is to provide learning experiences via a technology-based platform. Cyberlearning in some way is an extension of and a twist on e-learning. [4] While e-learning refers to how the content is delivered, in cyberlearning technology is used to carry out learning experiences which would be otherwise impossible without technology. [4]

2.2 User Interface (UI)

UI and UX are often confused terms. [3] They have similarities, but in reality these are completely different things. UI stands for User Interface. User Interface design defines the graphical layout of the page or application. User interface designers are responsible for defining the how each element will look, their size and position. Its their job to make the look and feel of the page or application aesthetically pleasing and attractive. Animation, transition design, choosing of the correct fonts and images also part of the UI design, these have to be designed such a way that they are in harmony with each other and logically connected to each other. [3]

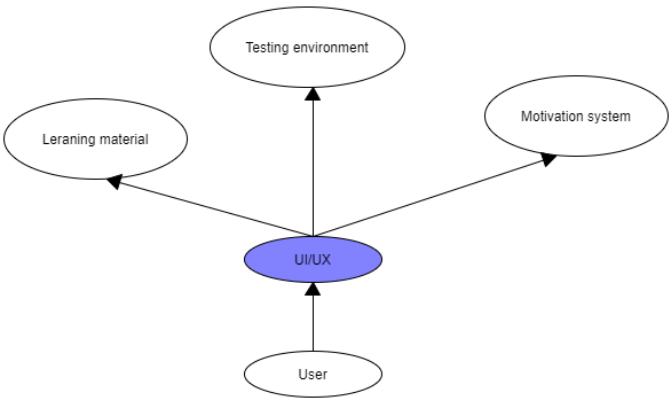
2.3 User Experience (UX)

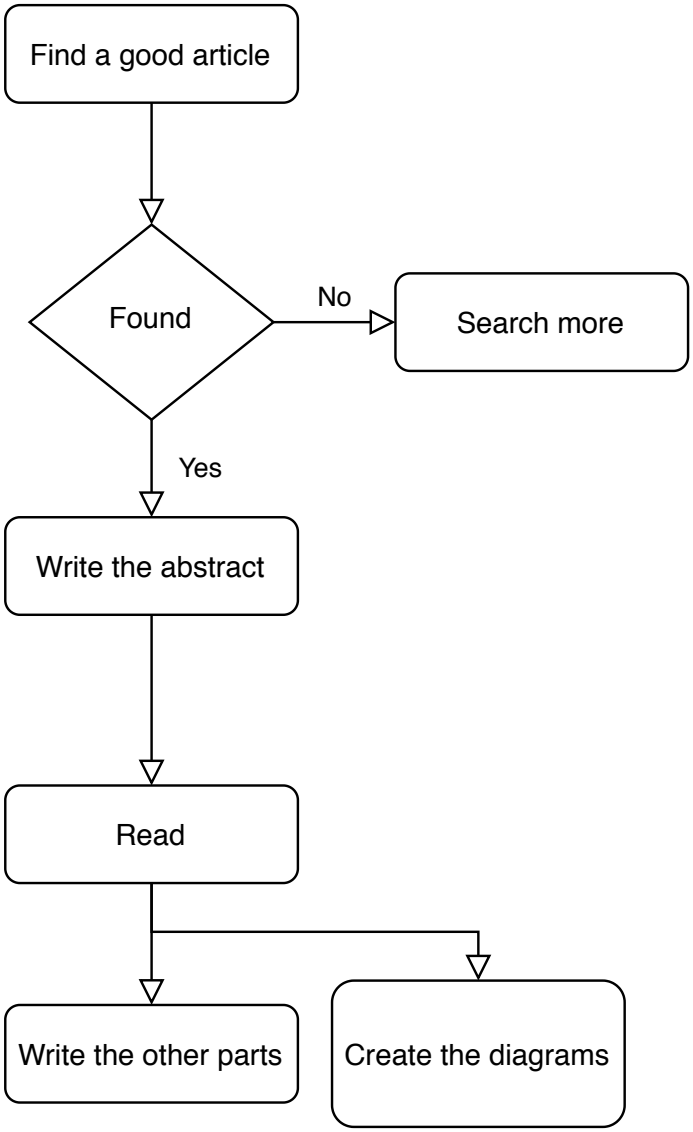
UX stands for "user experience". UX designers are also concerned with the User interface. [3] The main difference between UI and UX is that while UI focuses on the look of the application, UX focuses on the functionality and interactions of the application. UX designers are responsible form making sure the User Experience is intuitive and easily understood by everyone. They have to make sure that the connection between different parts are organized in a logical way. UX designers are also have to have and understanding of how users interact with their device so that the UX can be easy to use and user friendly. [3]

References

[1] H. W. Alomari, V. Ramasamy, J. D. Kiper, and G. Potvin. A user interface (ui) and user experience (ux) evaluation framework for cyberlearning environments in computer science and software engineering education. *Heliyon*, 6:e03917, 05 2020.

[2] C. L. Borgman, H. Abelson, L. Dirks, R. Johnson, K. R. Koedinger, M. C. Linn, C. A. Lynch, D. G. Oblinger, R. D. Pea, K. Salen, M. S. Smith, and A. Szalay. Fostering learning in the networked world: The cyberlearning opportunity and challenge. a 21st century agenda for the national science foundation, 2017.


Testing environment
Leraning material
Motivation system
UI/UX
User


Find a good article
Found
No
Search more
Yes
Write the abstract
Read
Write the other parts
Create the diagrams

[3] T. M. Design. What is ui design? what is ux design? ui vs ux: What's the difference, 02 2019.

[4] M. Lynch. Cyberlearning vs. elearning – is there a difference?, 10 2020.

[5] J. L. Moore, C. Dickson-Deane, and K. Galyen. e-learning, online learning, and distance learning environments: Are they the same? *The Internet and Higher Education*, 14:129–135, 03 2011.