

## Concepts of user experience design and their role in achieving ease of use and effectiveness of responsive educational websites

**Dr. Yasser El Shamy**

Associate Professor, Media Department, College of Language and Communication, Smart Village, Arab Academy for Science, Technology and Maritime Transport, yasser.el-shamy@aast.edu

### **Abstract:**

In the era of informatics, everyone is in a race toward technology to keep pace with the new technological innovations that make life more luxurious and easier, and since our current era is the era of digitization, many educational institutions have sought to use technological innovations in education, especially after the changes that occurred due to the repercussions of COVID 19 around the world and it impacts on the shape of educational systems in general. With the tremendous development in the digital space and the great spread of the use of mobile phones and smart devices, the focus of those in charge of developing websites has become on how to improve the website experience and presentation in a manner consistent with the nature of smart devices, and in a way that reduces the burden of costs and procedures associated with improving and developing the infrastructure of the website itself. The development in communication and information technologies and the spread of electronic knowledge among school and university students have helped to the emergence of new forms of e-learning systems and distance education to face the new variables, and the potential of mobile communication technologies has been invested to show a new concept of remote learning that relies on the use of Smart Devices.

Despite the great development in the field of website design and the emergence of techniques that ensure the flexibility of web pages, research and studies have lacked identification of clear design strategies that ensure the application of a design that responds to all mobile devices according to clear standards and rules. The benefit of responsive design is not only the attempt to adapt the site's content to different types of devices and screen sizes but it is also concerned with studying the user experience and needs, in addition to the principle of simplicity in design.

With the spread of e-learning platforms, it has become more useful to pay attention to the user experience in terms of interactions between the learner and the educational platform via mobile devices, that modern trend that has begun to be interested in recently with the emergence of responsive design technology for websites, as the design of educational websites is one of the most important areas that must be primarily concerned with the user to provide an educational design that is suitable with his needs and interests, and at the same time corresponds to the continuous and increasing technological development in the field of smart devices and website design, in a manner that does not conflict with the educational goals to be achieved.

With the great development in this field, new technologies have emerged that will save time, effort and money to design websites that are suitable for all devices of different sizes and degrees of clarity, where these technologies have been combined to allow adaptation and response of design elements for websites, which is called the Responsive Design Technology for websites. Therefore, new research directions in the field of educational technology emphasized the importance of a clear procedural strategy that defines the most important design criteria and rules necessary to build a responsive design for educational sites based on the experience and characteristics of the learner, and based on the cognitive and design theories necessary to develop a general framework aimed at reducing the burden and visual dispersion and allowing the use and navigation of the educational website easily. The development of information and communication technology and technological innovations, was accompanied by a significant development in e-learning platforms, the multiplicity of learning tools and interest in developing electronic learning management systems (LMS), and despite the multiplicity of these systems, they lacked standards for interoperability on various devices, this affected the level of interface design and ease of use. Given that responsive design is a learner-friendly technology that helps to focus the attention on learning and reduces the cognitive and visual burden, the non-responsive design of educational sites leads to a sense of ambiguity and visual distraction, and this is a result of the inconsistency of the visual elements, their arrangement and their inadequacy for the space of presentation, or the lack of proportion to the size of visual elements, which may create a state of confusion and discomfort for the user and force him to leave the user interface due to the feeling of aversion to the visual design.

The responsive design of websites can be technically defined according to its basic components, which are (Flexible grid system, Flexible images, and Queries directed to smart devices) Responsive design is an effective way to express these three technical components simultaneously in a way that facilitates design responsiveness to all devices and screens, so responsive design is the best technology for web design today, one of the main benefits of responsive design is that it is also concerned with studying the user's experience and needs, in addition to the principle of simplicity in design.

**Methodology:** The research is developmental research based on a descriptive-analytical methodology to prepare the theoretical framework. **The research problem** can be identified in the absence of a clear procedural strategy for designing educational websites with a responsive design technology based on the user experience, despite its importance to keep pace with the tremendous development and progress in the use of smart devices, and its great impact in providing websites that respond to the nature of these devices and the size of their screens, which reduces the visual burden and dispersion and increases the usability of these websites.

**Objective:**, the research aims to build a responsive design strategy for educational websites based on the user experience. It

also seeks to uncover the effect of using a responsive design strategy for educational websites based on user experience in developing educational achievement, ease of use of the educational site, reducing the visual burden as well as reducing visual dispersion. **The results** of this research emphasized the importance of taking into account some important theories when designing websites, such as Cognitive Load theory, Perceptual Load Theory, Attention Theories, User Experience Theories, and Web Design Theories. The research recommends educational website designers to rely on responsive design as the most reasonable method, Therefore the principles of user experience and interactive design must be available to the educational designer, to be able to design a learner-based environment, and to mix the successful practices of user experience with the learner's experience, to design and develop innovative and useful solutions for the use of smart devices in education.

The research also confirmed that it is clear that the design of websites and the processing of the visual elements in the graphic interfaces affect the dispersion and the visual burden of the learner, which subsequently affects the perceptual burden of the learner. Also, the theory of burden varies with different characteristics of individuals, and that individual differences in cognitive and emotional aspects may reduce or increase the burden on individuals. It also recommended that future studies should be conducted on the relationship between the characteristics of individuals and the visual burden due to the scarcity of research on this relationship.

### **Keywords :**

responsive design, interoperability, online education, visual dispersion, cognitive load.

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