

DCU4007: Design Thinking & Maker Culture

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MA Digital Culture

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Should we use a User-Centered Design approach for online education tools?

Creating technologies can be difficult and challenging, especially when their goal is to be useful and serve people's needs. Almost everything nowadays, go online, from shopping to learning, and the creation of useful online technologies seems more crucial than ever. One of the ways to design and build technologies is to adopt a User-Centered Design approach. The term User-Centered Design (UCD) became popular after the publication of *User-Centered System Design: New Perspectives on Human-Computer Interaction* by Norman and Draper in 1986.

What is UCD exactly?

Abras, Maloney-Krichmar and Preece (2004) simply define UCD as “a broad term to describe design processes in which end-users influence how a design takes shape” (p. 1). UCD has as its main goal the end product or service to provide the best experience to the user. To succeed that, the fundamental concept is to involve users to all the stages of the design process by evaluating every step, give feedback and, in general, be heard! There is a variety of tools one designer can use to do so. For example, interviews or questionnaires, but also more interactive ones like role-playing, walkthroughs, and simulations (Preece et al., 2002, as cited in Abras et al., 2004). As a result, it is almost certain that the product will be used as intended and users will have to put less effort to learn and get used to it (Abras et al., 2004). However, to ensure its effectiveness, UCD is based on three main key points, it involves empathy, it is iterative and interdisciplinary.

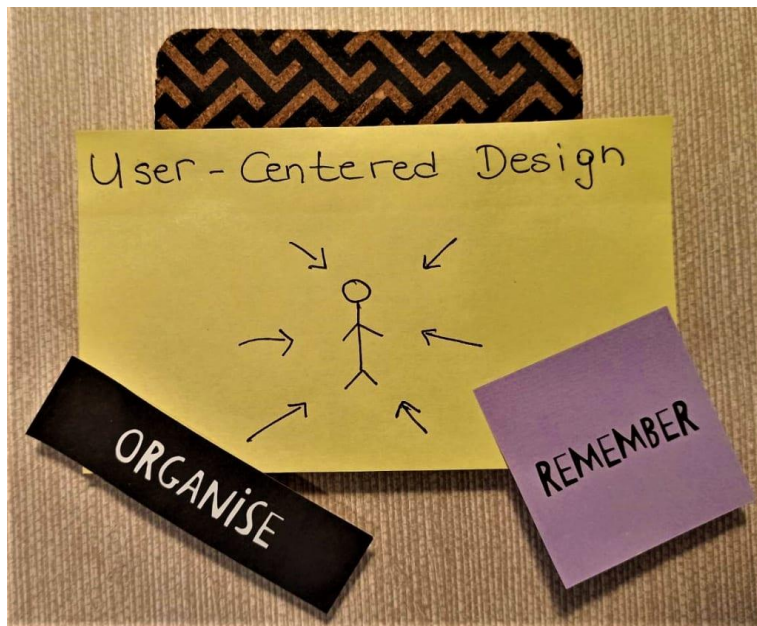


Photo and sketch by me

Let's elaborate a little bit these three characteristics. *Empathy* is essential when it comes to understanding other people's needs and desires. The designer should have empathy for users and place them at the heart of the whole process (Schreibman et al., n.d.). This is the only way to come close to the user and truly understand what they are looking for. UCD is an *iterative*, and not a linear process. User's feedback is taken through out the process which means that the designer may have to go back and forth to different stages when designing (Schreibman et al., n.d.). To make it simpler, the designer may provide a prototype to the users which need further changes to satisfy their needs, or maybe their needs themselves have changed and the designers have to further adjust the design. Finally, the process is *interdisciplinary*. Understanding and interpreting users' desires is a challenging journey. To accomplish it, experts from different backgrounds, like humanities and social sciences should cooperate (Schreibman et al., n.d.) to bring valuable meaning.

Are you a listener? Listen to our podcast to better understand the concept of UCD!

But can this approach be adopted when designing online education tools?

Many scholars and teachers have already tried to design education tools, from offline and online courses to learning resources, by adopting a UCD approach. However, when designing an educational tool, the user is not the only "identity" of participants that must be taken into account. The users of these tools must also consider as learners (Altay, 2014; Blythe, 2001;

Hadjerrouit, 2010; Kahraman, 2010; Lambropoulos, 2007). The end product should not only serve the needs of the user but also to ensure educational standards and consider “the learner as user” (Lambropoulos, 2007, p. 6). Norman, & Spohrer (1996) claim that engagement, effectiveness and viability are basic elements when designing learning processes with new technologies. Particularly, when designing an education tool, the designer must find ways to engage learners in learning material and motivate them to interact as a way of learning. They must ensure that learners have truly understood their topics and enhance their knowledge and skills, and that the product itself is something that can truly work in education environments and provide both engagement and effectiveness in the end (Norman, & Spohrer, 1996, p. 26). When referring to the pedagogical success of an educational tool, Altay(2014), Blythe (2001), Hadjerrouit, S. (2010) and Kahraman (2010) agree that effectiveness and learnability are fundamental. Furthermore, Lambropoulos (2007) notes that quality of online education in term of “intention, information, interactivity, real-time evaluation, visibility, control, and support” (p. 6) is another vital aspect of the learning process.

Having practised, analysed and included the pedagogical standards when designing educational tools with a UCD approach, **all the mentioned researchers seem to agree that is a successful and recommended way.** Blythe (2001) in his analysis of designing online courses by taking a UCD approach suggests that designing *with* and not *only for* the students bring their knowledge and needs ahead. This leads to a truly usable online course with fewer mistakes and risks of not meeting the expectations. Moreover, Kahraman (2010) supports that effectiveness of the course and successfulness of the student can be both reached by UDC. Most importantly, with less effort from the user/learner because being a part of the process familiarise them with the final product beforehand. In terms of the quality of the online education tool, Lambropoulos (2007) and Hadjerrouit (2010) claim that UCD can be a powerful approach. This is based on the fact that having students as a part of the design, evaluating every stage and giving necessary feedback, provide the unknown and necessary knowledge to maximise the quality and usability of the outcome. Hadjerrouit (2010) adds that not only the student perform better but also build empathy and emotional connection with other users, including the teachers themselves, and enhance their social skills such as mutual respect and responsibility. Nevertheless, as noted earlier UCD is based on all users needs and desires, and when it comes to an online education tool, users are not only the students but also the teachers. Therefore, it is crucial to understand that the role of the teacher is extended to the role of the designer too (Blythe 2001; Kahraman, 2010). Taking into consideration that

teachers acknowledge the pedagogical and cognitive standards, bringing this knowledge on the design is crucial for its success.

However, even taking a UCD approach to design an online education tool sounds ideal both in terms of usability and learnability, it is not always feasible to do so. Blythe (2001) identified three main difficulties: “time, transience, and power” (p. 336). UCD is a long, time-consuming process. Interview, questionnaires and other UCD tools need time to organise, create, use and interpret. Moreover, UCD is an iterative process which means that all these tools and procedures will take place numerous times until the final product is ready to use. Usually, teachers have an academic year in their hands to take advantage of which is restricted. Additionally, in terms of this academic year, many time students either have to continue their studies or graduate. As a result, the teacher/designer is difficult to keep up with them and get their feedback in all the stages of the designing process. Finally, as noted by Blythe (2001) “participatory design aims at democratic engagement, but differences in knowledge, experience, and institutionally sanctioned forms of power make it impossible to equate the teacher-student relationship with other workplace relationships” (p. 338). In other words, co-design an online education tool with students can be challenging as the position and knowledge of the teacher/designer may affect the discussion between them both in terms of the wording used to express, and the feeling of the student of being evaluated by their teacher for this.

Interview time !

To gain a deeper understanding of the importance, but also the possible difficulties, of taking a UCD approach when creating an online education tool, an interview was conducted with **Costas Papadopoulos**. Costas Papadopoulos is an Assistant professor in Digital Humanities and Cultures studies at the Department of Literature and Arts in the Faculty of Social Sciences and Arts, at the University of Maastricht. Except his research on heritage visualisation using a variety of 2D and 3D media for quantitative and qualitative studies, he has also been involved in the development of an educational platform, where teaching and learning material for Digital Humanities has been developed.

The platform is called [DariahTeach](#) and is a platform for Digital Arts and Humanities educators and learners. It allows educators either to publish teaching material or use it in their learning process and provides reading material for students and lone learners. Is free, web-

based and easily accessible without any mandatory subscription. Moreover, it is partially a result of a UCD approach. Although the project did not start based on UCD tools for understanding users' expectations, evaluation and feedback from students in different stages and phases of the development of the platform were essential to improve it and enhance its usability.

For more information about dariahTeach platform, read the following blog post by Thomas Papatzikas:

Nonetheless, let's see what Costas shared with us from his point of view and experience of designing such a platform.

As argued from mentioned scholars, Costas agrees that UCD can be a useful tool to design an education platform that students will truly use eventually. He supports that:

"I would say is essential to take into account what users need...we do have like examples... were things have been developed probably without taking into account user requirements or without taking account users, without involving users or involving users as an afterthought and then they realized that who would have thought to build such a thing, I cannot use it."

Moreover, as Hadjerrouit (2010) argued, Costas agreed that UCD provides also a way to engage with end-users, in his case students.

"I think from developers' perspective is about building empathy with individuals you are designing for. Sharing what you have created with the people you are designed for. So, it's not only getting feedback from the users ... but also I think this ultimate engagement with your end-users create a kind of a community around to project, which is very nice for the project, for the developers and for ultimately their intended users."

Additionally, Costas argues that taking a UCD approach to building online education tools make the platform more usable and, as a result, more effective in terms of interactivity with the learning material provided. A problem he notes is having a poor interface, complicated to the user which can lead to less concentration affecting the learning process. Talking about this issue Costas said that not following a UCD can lead to:

“Poor interface design ... [that] can slow down the [learning] process and it can impose cognitive obstacles, which means that users can get easily frustrated if the interface does not properly work... especially now that we have a very short attention span, it means that we will also leave that platform and we’ll go to find what we’re looking for somewhere else.”

And what about potential difficulties and limitations?

When asked regarding difficulties they may encounter when designing DariahTeach, Costas pointed out that the constraints of the system, which DariahTeach is based on, didn’t allow them to fully redesign based on student’s feedback, because as he mentioned:

“DariahTeach is based on a learning management system, which is called Moodle...an important thing to remember is that we were very much constrained by the technology we’re using, by the platform where we were using”

Furthermore, commenting on the fact that UDC can be a time-consuming process, Costas said:

“I don’t think that the time you spend in designing or executing a user-centered design approach can be compared to what you would have to spend in terms of time and resources when you ultimately realize that what you produce is not usable or it’s not accessible.”

Though out our interview Costas repeated that many scholars claim that is a time-consuming approach, but as he supports designing a product without users participation, or even include user at the final stage of the design, can be much more consuming not only in terms of time but also in terms of resources such as the budget available.

Closing our interview Costas claimed that:

“User-centered design is the only approach we should take if we’re designing to cater for our user needs“

Costas Papadopoulos

Interested in reading the whole interview?

[Click here](#)

Designing usable new technologies is not a simple task. Especially the designing of online education tools can be even more challenging due to the need to meet both users' and learners' standards. Nonetheless, a way to ensure that the final product will meet the users' expectations and serve their needs, is to adopt a UCD approach. Placing the users/learners at the heart of the designing process and create based on their desires, will lead to a product which students will not only truly use to effectively gain knowledge, but also to build empathy and be a part of the knowledge itself..

So, do you feel now that you understood what UCD is? And... should we use it when designing online education tools?

Let's find out!

What are the main characteristics of UCD?

Online Education Tools

Want to learn even more about UCD? Check my fellow students blogposts too!

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