



## Adaptive Design: How to Build an Effective Learning Experience

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### Abstract

*Open Educational Resources (OERs) are becoming increasingly important for the modern learning experience. Companies and Universities rely on Massive Open Online Courses (MOOCs) and e-learning courses to accompany or even replace traditional methods of teaching. Roles in educational scenarios are changing too: teachers are becoming facilitators by supporting the students' work, while learners are no longer passive content-consumers but need adaptive contents and act more and more as content-makers. Platform developers need to be aware of this situation and thus provide customized education.*

*So, which are the best ways to create a learning environment based on OERs making use of adaptivity criteria?*

*We've been asking ourselves this question for a very specific reason. We're working on Lead3.0 Academy, an Erasmus+ project aiming to establish deep connections between the academic world and business. By 2018, the Academy will provide a learning model and training programmes for teachers, managers and students, delivered through a virtual learning environment using OERs and MOOCs and involving communities of practice.*

*One initial answer to our question could be the adoption of a lean production approach to designing the platform. This method is based on the concept of minimum viable product, meaning that the developer already starts collecting feedback during the design and the development phases. This makes it possible to meet the specific needs of the end-users without having to wait for the release of the finished product.*

*Learning analytics are another technique we are considering for achieving customization. Collecting data to track specific preferences, achievements, habits and weaknesses allows the developer to design a system that interacts with learners by suggesting paths, sharing results or connecting them with other users. Offering a wide range of different media and learning strategies such as gamification, scenario-based lessons, interactive exercises, webinars or audio-lessons is fundamental for engaging users as co-designers of their learning journey.*

*This approach will allow students to proceed at their own pace while building their personal learning journey on Lead3.0 Academy, while, at the same time trainers will be able to access a community of practice and a tool-kit to support and empower their lessons.*

### 1. Introduction

One of the biggest changes in the contemporary educational landscape is the spreading use of Open Educational Resources (OERs). The term was first adopted in 2002 at UNESCO's Forum on the Impact of Open Courseware for Higher Education in Developing Countries and indicates teaching and learning materials that are freely available online for everyone to use, whether they are instructors, students or self-learners. [1] OERs are becoming increasingly important to define the modern learning experience, and appear to be one of the leading trends in open and distance learning as a consequence of the openness movement. [2]

Another major innovation for education in recent times is represented by the appearance of Massive Online Open Courses (MOOCs) in 2008. MOOCs are a distance-based approach to e-learning wherein many students are able to participate to a course in a highly collaborative and interactive fashion. One of their major features is the support for community interactions between learners and teachers that increases comprehension, engagement and motivation in taking the course. [3]

Even companies are relying more and more on MOOCs and e-learning courses to accompany or replace more traditional methods of teaching, such as face-to-face classroom settings. In 2014, 8% of organizations worldwide were using MOOCs for corporate training, and a further 7% were considering experimenting with them in the near future. By the end of 2016, this rate is forecast to rise to 28%. Uptake was even higher in the public sector, with 42% using MOOCs during 2014. [4]

We're assisting in a shift of roles too. The teachers' main task seems to be supporting their students' work rather than only giving them notions, thus becoming facilitators, while on the other hand learners

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cannot be seen solely as passive content-consumers, and tend to act more and more as content-makers.

Moreover, educational platforms nowadays must be able to provide learners with some degree of customization in order to let them personalize their learning journey to increase engagement. [5] In my opinion a good way to do so could be to combine elements of adaptivity (system-controlled adaptation) and adaptability (user-controlled adaptation) for an adaptive learning system. Adaptive learning mechanisms seem very effective when it comes to providing learning paths based on individual differences. [6]

OERs are another useful solution to achieve personalization: they could be easily picked and arranged to construct a personalized learning path targeted for a specific learner. Thanks to their variety, a facilitator could propose a different media mix according to the individual necessities or tastes of the learner.

## 2. Lead3.0 Academy

Given all these issues, I've been asking myself which could be some good solutions to designing a learning environment based on adaptivity criteria that makes use of OERs and MOOCs.

This I did for a very specific reason: the organization for which I work is a member of the partnership involved in Lead3.0 Academy. [7] This is an Erasmus+ project aimed at establishing deeper connections and a knowledge alliance between the academic world and business. The project's main objective is to help develop the so called "soft e-leadership skills" (such as decision-making, people management, strategic vision, design, creativity, etc.) which are crucial for the digital-age labour market, and to support the birth of a community of practice between the trainers. Lead3.0 Academy aims to become the EU reference in defining soft e-leadership skills and providing training programmes for facilitators (teachers, trainers, managers). Training will be delivered using a learning virtual platform, where facilitators will have the tools needed to create their own online courses, either by browsing through existing OERs or by building the necessary resources themselves.

The platform is scheduled to be fully operative by 2018.

## 3. Approach

One initial answer to my question could be to adopt a lean production approach in designing the Academy. This method is based on the concept of "minimum viable product", a product which has just those core features that allow the product to be deployed. The product is typically deployed to a subset of possible users that are thought to be more forgiving, more likely to give feedback, and able to grasp a product vision from an early prototype or marketing information. It is a strategy targeted at avoiding building products that customers do not want. [8] This means that the developer can already start to collect feedback during the earliest stages of production, such as the design or development phases. [9]

Intermediate versions of the platform will be periodically released for testing. The feedback from these early releases will then guide the development of successive versions, and so on. The major benefit coming from this procedure is being able to gather information for meeting the specific needs of the end-users without having to wait for the finished product to be released.

Another solution we're planning to use to achieve customized learning paths is the introduction of elements of adaptivity and adaptability. These technologies are emerging in educational settings as a method of tailoring instruction based on the learners' background, experiences, and prior knowledge. [10] [11]

Adaptivity implies the implementation of learning analytics within the Academy. By using analytics, the system would be able to collect data for tracking the user's specific habits, preferences, achievements or weaknesses. This information will help us to design a platform that can meaningfully interact with the learner by suggesting paths, sharing results or proposing connections with other users.

Adaptability refers to the act of obtaining some kind of feedback directly from the user in order to offer a more customized learning experience. Questions about job role, academic career, interests or prior knowledge on the subject can all be used in this kind of approach.

A digital leaning system that makes use of computerised and statistical algorithms gives us the opportunity to overcome the obvious drawbacks of traditional survey methods. [12] Experimental results show though that the effectiveness of adaptability methods in digital learning is comparable to expert-designed learning paths, and learners are more satisfied and learn efficiently. [6] So, implementing both adaptivity and adaptability criteria would appear to be an effective path to follow.



#### 4. Further developments

A critical aspect for the Academy, as for every learning scenario, could be the support for the users' commitment and motivation. We plan to offer a wide range of different solutions and learning strategies to help trainers in doing so. The objective will be to encourage final users to be the co-designers of their own learning journey within the Academy.

One of the learning strategies that the platform intends to offer is social networking. Research results suggest that the use of blogs, forums, wikis or chats not only made learners enjoy and appreciate the social learning experience, but also made them support one another while learning. [13] [14]

Gamification is another tool we're planning to offer. While social networking has already demonstrated its efficiency in digital learning, gamification, which is the use of game-thinking and playful design in non-game contexts, has only shown so far its potential as a motivational tool. [15] [16] Still, if combined properly and arranged with other tools, gamification can significantly increase engagement. [17]

Learners seem to need some kind of interactivity when learning online: some data suggest the important educational value of interactivity, as it increased students' understanding of content, their willingness to explore, and the ability to think critically, factors which are important in preparing students for an ever-changing labour market. [18]

#### 5. Conclusions

In my opinion, the combined use of the methods and tools described would permit us to offer an adaptive learning environment. A lean production procedure for releasing intermediate versions of the platform, the implementation of both adaptivity and adaptability tools, and offering trainers a variety of different instruments to support their students are all part of the answer to my initial question. This way, users will be able to proceed at their own pace while building a personal learning journey on the Lead3.0 Academy. At the same time, trainers will be granted the access to a community of practice and a tool-kit to support them in empowering their courses.

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