

## Open Apps: Opening Teaching Experiences and Applications

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### Abstract

The Universitat Oberta de Catalunya (Open University of Catalonia, UOC) is an online university that makes extensive use of information and communication technologies to provide education. Ever since its establishment in 1995, the UOC has developed and tested methodologies and technological support services to meet the educational challenges posed by its student community and its teaching and management staff. The know-how it has acquired in doing so is the basis on which it has created the *Open Apps* platform, which is designed to provide access to open source technical applications, information on successful learning and teaching experiences, resources and other solutions, all in a single environment. *Open Apps* is an open, online catalogue, the content of which is available to all students for learning purposes, all IT professionals for downloading and all teachers for reusing.

To contribute to the transfer of knowledge, experience and technology, each of the platform's apps comes with full documentation, plus information on cases in which it has been used and related tools. It is hoped that such transfer will lead to the growth of an external partner network, and that this, in turn, will result in improvements to the applications and teaching/learning practices, and in greater scope for collaboration.

*Open Apps* is a strategic project that has arisen from the UOC's commitment to the open access movement and to giving knowledge and technology back to society, as well as its firm belief that sustainability depends on communities of interest.

**Keywords:** open source, open access, learning apps, learning experiences, learning practices

The Universitat Oberta de Catalunya (Open University of Catalonia, UOC) is an online university that makes extensive use of information and communication technologies (ICTs) to provide education and lifelong learning services. It was created to meet the educational needs involved in e-learning and to engage in educational activity by making the most of the internet's potential. Ever since the UOC was established, its model of education has been its main distinguishing characteristic.

The learning activity of students lies at the heart of the model in question, and they are able to draw on three main elements to help them carry it out, namely resources, collaboration and accompaniment (UOC, 2010).

1. Resources are the content, facilities and tools necessary to carry out and assess learning activities.
2. Collaboration is defined as all the participative and communication dynamics conducive to students and teaching staff constructing knowledge through teamwork in situations involving solving problems, carrying out projects and collective creation.
3. Accompaniment comprises everything members of teaching staff do to monitor students and assist them with planning their work, carrying out activities, assessment and decision making. It results in students receiving personal treatment, enjoying permanent guidance while at the UOC, and interacting and communicating with the education community.

Those three elements have resulted in the UOC being the backdrop to various innovative educational experiences involving successful solutions to problems related to e-learning. Innovation is a cross-cutting feature of all the University's teaching and management activities and processes.

### **1. Teaching and management innovation**

At the UOC, as is the case in most universities, initiatives involving innovation in teaching and management are not the exclusive domain of a particular department or group, but can potentially occur anywhere within the institution. The UOC therefore has mechanisms for encouraging such innovation.

Firstly, the Office of the Vice President for Research and Innovation promotes teaching and management innovation projects by annually inviting applications for funding for such initiatives. Since 2007, 135 of the 273 projects proposed by members of the UOC's 725-strong teaching and management staff have been put into practice.

The UOC also has an Innovation Programme for identifying and speeding up innovation processes. Specifically geared to fulfilling the goals established by the vice president for research and innovation and the Innovation Committee (which comprises the University's vice presidents and general manager), the programme has an annual budget to invest in projects and ideas with great potential for disruption.

Lastly, and given the importance teaching innovation holds for the University, the UOC has an Office of Learning Technologies, which offers lecturers assistance with: 1) designing and preparing educational resources for generating richer virtual learning environments; and 2) basic aspects of the institution's model of education (resources, collaboration and accompaniment), taking advantage of the wide range of options available on the internet. Essentially, the Office of Learning Technologies collects information on the needs of students and lecturers, defines the functional requirements corresponding to each such need, and implements online tools capable of satisfying them.

ICTs are not only crucial to the UOC's teaching activity, but also to offering all its academic services and covering all the management processes involved. The University therefore annually invests in improvements to its management applications. Doing so is also an essential requirement for many other universities, and is by no means exclusive to entirely virtual institutions such as the UOC, a situation clearly reflected in the volume and activity of the *Moodle Plugins Directory* (Moodle Community, 2012), which contains modules and plug-ins for educational platforms, as well as applications for management and for integrating business systems into the Moodle platform.

In teaching and management, initiatives of the kind in question can be deemed innovative once they have been shown to adapt and improve previous processes and methodologies. To that end, it is essential to have the necessary time to be able to implement them (time to market), as well as a means of testing them in a controlled environment where their results can be monitored and their efficacy assessed. Last semester (2011-12), pilot testing of one kind or another was carried out in approximately 200 of the UOC's virtual classrooms, with real students and lecturers.

Once an initiative's efficacy has been proven (ineffective initiatives are discarded), its scope must be studied. The controlled environment in which it was tested might not have been representative or may simply have been insufficient to gauge its real impact. Identifying an initiative's scope can often entail much more work than the initial innovation did.

In any case, most innovations are of the incremental variety (Hollander, 1965). Nonetheless, steps should be taken to enhance an innovation's impact and its effect in terms of acting as an incentive for change. Collaboration, exchanging opinions, comparing experiences, dissemination, building up a following and regarding innovation as cross-cutting and non-exclusive tend to be good ways of facilitating change. Opening up in such a way can sometimes lead to an incremental innovation generating changes that eventually bring about a disruptive

innovation (Bowder and Christensen, 1997).

Helping to open up innovation is the UOC's aim in creating the *Open Apps* platform (UOC, 2012). Presented as a directory or inventory of the UOC's applications, experiences and methodologies, it is designed to stimulate their use within the University and open them up to the outside world, enabling any educational institution, lecturer, student or IT professional to access, learn about and download them, replicate the learning practices described in them, test them, offer opinions on them and participate in their development.

## **2. The *Open Apps* platform**

The *Open Apps* portal is intended to place the experience (in teaching, learning and management) the UOC has gained in more than 15 years of providing e-learning services at the disposal of the education community, along with the latest learning technology innovations implemented in the classrooms on the University's Virtual Campus. *Open Apps* is one of several UOC services characterised by the same open access philosophy. Others include the O2 institutional repository (UOC, 2011), which provides access to and preserves the University's scientific output, and the *OpenCourseWare* website (UOC, 2008), through which its educational materials are freely available.

*Open Apps* is thus a platform that provides open access to real experiences of using technology for lifelong learning and for management related to e-learning. It is a medium in which lecturers, educational institutions and sector professionals can easily find tools of the kind in question, reflect on their use and share experiences, and which enables them to apply the same tools in their own e-learning environment. In short, it is an online library of open resources for education and the management thereof.

### *2.1. Apps in the sense of applications and experiences*

The content of *Open Apps* must be considered from a broad perspective, as the platform's apps are not limited to software. In this case, the term 'apps' refers to the distribution system and layout used rather than to the nature of the object. Functionally speaking, the portal's format is similar to today's most popular app stores and markets, so users are familiar with the way the interface works and the concept of such platforms.

A search system is available to users for accessing the Open Apps, and it initially appears along with an overview of recent additions and featured applications. For each app, users are able to access associated resources, information on use and a range of related services. Instead of the 'Download' button found in most app stores or markets, the *Open Apps* platform has an 'I'm interested' button, by means of which users specify whether they want to download a given app, test it, receive technical support for installing it or contact the lecturer responsible for it with a view to helping develop it and/or sharing experiences, educational resources, etc.

Technologically, the portal is based on the *Joomla* framework and some of its plug-ins, such as FLEXIcontent. A particularly notable aspect of the platform is its advanced search functionality, which enables users to search by competence, based on the classification established in the Tuning project (Tuning, 2000); by knowledge area; or by educational purpose, based on a classification established as part of the *Open Apps* project itself, including options such as assessment tool, content preparation, methodology and learning activity. The metadata used to describe the Open Apps is also based on the LOM standard and the Dublin Core terms.

The applications and experiences accessible via the *Open Apps* platform have to meet certain requisites. They must:

- Be innovative. They must represent a significant new development and an improvement in their field of application in comparison to conventional solutions, or provide elements and connections which did not exist previously. They may be services, products or methods and new experiences.
- Be interoperable. They may not be based on endemic technological or methodological solutions that only function in a restricted context. They must be readily applicable or

adaptable to multiple contexts and offer scope for complementing other solutions.

- Be open. They must be covered by open copyleft licences (Creative Commons, GPL, GNU, etc.) under which they can be freely used and modified so that third parties can develop them.
- Have been put into practice previously. They must have been applied, reasonably successfully, in their original context, and there must be prior experiences that vouch for their results or provide knowledge regarding their use.

At present, users can access seven innovations via *Open Apps*, and work is being carried out to make a further 20 applications and experiences available in September 2012. One of the applications already available via the platform is *GestióIP*, an automatic IP address and network management tool. *Mathcasting*, meanwhile, revolves around maths lecturers' experience of working with LiveScribe, a smart pen that records written and audio input. *Microblog*, a tool that draws on more popular technologies, is used as an education-oriented Twitter in IT and law classrooms. Based on the open source application *StatusNet*, it is a solution that fosters communication between students and lecturers, enabling them to interact via mobile devices. *Present@*, a teaching experience and application based on *WordPress*, provides a simple means of uploading and viewing videos of students' activities. Its main innovative feature is that it allows for forum-style discussions of such videos, enabling students and lecturers alike to establish dialogues with different purposes. It has been used for the presentation of degree students' final projects.

The UOC's School of Languages has provided the other three innovations currently available via the platform. The *Japanese Virtual Writing Notebook* is for learning to write Japanese characters (kanji). The *Tandem* application enables pairs of students to establish synchronous oral dialogues guided by content involving activities such as spotting differences between photographs and identifying similarities between objects and situations. Finally, *Langblog* is an adapted blog-style application that has functionalities for creating video and audio material and is geared to acquiring oral production skills asynchronously. In addition to language teaching, it has been used for law studies, for simulating certain oral communication tasks corresponding to lawyers.

## 2.2. Purposes and users of Open Apps

The main purpose of *Open Apps* is to place the UOC's know-how at the disposal of the community, so that educational institutions and individuals can apply, adapt or develop it.

Another purpose of *Open Apps* consists of helping forge cooperative ties between users and organisations, going beyond mere application or use. An Open App may be modified and adapted by third parties, as well as serving as a basis for the establishment of other cooperative agreements between users and organisations.

Following on from the above, the *Open Apps* platform's potential users and the specific purposes initially established for it are as follows:

Teachers: *Open Apps* offers teachers from the face-to-face and distance learning arenas alike information on experiences of using technology and tools for managing education. Those experiences may give them food for thought, provide them with new ideas, be directly applicable in their teaching activity or be applicable in different ways, for other purposes or uses. The platform also enables teachers to swap information with others in the same profession who have already used the tools in question. It thus encourages members of different education communities to exchange and pass on their knowledge and experiences.

Training providers: *Open Apps* lets institutions that provide e-learning or blended learning services benefit from the new options the UOC's applications and experiences offer them, thus enabling them to meet the demands of their students and teaching staff by providing access to more tools specifically designed for distance learning in different contexts. Additionally, the wide variety of tools that will be available in the medium and long term will allow them to personalise their courses and specialise to a far greater extent.

Online service or tool providers and developers: *Open Apps* gives institutions that develop learning tools a new perspective on educational technologies, one with a focus on the application itself, in contrast to current models that centre on the learning environment. In the case of *Open Apps*, the emphasis is very much on the application rather than the learning platform to be used. The *Open Apps* concept involves every teacher being able to use the tools best suited to their teaching activity, regardless of the learning platform with which they work. Many institutions whose main business focus is not education could consequently find that *Open Apps* offers them a good model for extending their activity in the education sector. For example, a company specialising in software for designing integrated circuits or a business that makes computer games could consider ways of using its tools for educational purposes without worrying about the platform into which they would need to be integrated. *Open Apps* is also an environment for the development of new applications and experiences. Students on the UOC's IT degree programme carry out their final projects with the possibility of them going on to become Open Apps in mind.

Cloud computing for education: *Open Apps* paves the way for a new type of online service based on a client contracting infrastructure for e-learning, thus making it unnecessary for them to own any such infrastructure. A service of the kind in question could be fully customised, allowing the client to specify which tools are to be used for teaching, how many students and members of teaching staff are to be catered for, in what combinations and when. The *Open Apps* platform's tools could be installed in cloud infrastructure to bring the cloud computing concept to education, thus giving rise to the possibility of creating companies that specialise in offering such services.

### 2.3. Future lines of work

The platform was launched in July 2012, with an initial sample of seven representative Open Apps. The project will become a stable UOC service as of November 2012, at which point approximately 20 Open Apps are expected to be available. Additionally, the UOC will have the necessary internal mechanisms in place to guarantee the platform's long-term stability and to allow new applications to be fully or semi-automatically uploaded in the future. To that end, procedures, checklists and forms will be developed to enable those responsible for applications to add to the platform.

It is hoped that the next batch of Open Apps made available via the platform will include applications that the UOC's IT students have developed. As of the academic year 2012-13, students taking the University's IT degree programme will have the option of carrying out a final project related to *Open Apps*, with a view to developing existing applications further and making it possible, for example, to access them via mobile devices.

The platform's evolution depends on the UOC community and the community of *Open Apps* users. The number and types of Open Apps available will ultimately be determined by the University's students, teaching staff and developers and the platform's users. Additionally, analysis of usage data and users' observations, feedback, needs, preferences and interests could see the platform develop into a more social medium with a greater emphasis on query resolution and consultation, and incorporate services in line with the education community's requirements. In that regard, one possibility is the current application platform becoming a kind of open service platform (Chesbrough, 2010), in the sense of an open innovation ecosystem in which providers, students, partners, institutions and collaborators participate. We believe that a radical change of direction could occur, involving the product/application-

focused approach being replaced by a new approach revolving around services, and that each institution's closed innovation could give rise to an open innovation concept.

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