Learning Creative, Learning MOOC

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Abstract. The work here presented concerns the realization of a MOOC hosted by a platform (www.europeanmoocs.eu), developed by the University of Naples Federico II under a CIP European Program, offering services to a variety of instructional designs and pedagogical approaches. The online course concerns an important chapter of projective geometry, commonly known as "The Theory of Shadows", which participants have to learn in order to draw the lights and shadows of space objects—from simple plane figures, to more complex geometrical solids and elements of architecture—correctly. The focus is on the essence of the discipline of drawing—exercising creativity and giving free space for students to express themselves. In order to maximize students' learning in creative way, we have created a MOOC, comprising two main components: contents and pedagogical design, as a software package. More particularly, learning design puts the learning journey at the heart of the design process and provides a set of tools and information to support a learner activity-based approach. In our experience, we can't say that a MOOC is the best way of teaching graphic education, but we can say that is the most improved one.

Keywords: Open learning · Digital inclusion · Drawing

1 Introduction

1.1 Development of Online Learning

Currently, OpenCourseWare offers free access to materials produced by high-profile education institutions, while open content resources offer free access to materials by single or network education institutions in order to support open learning or e-learning; user generated content can be used and reused in a formal way at the same time by institutions and teachers. The focus is now on assuring the validation of learning, adapted for use by a wider community of educators to promote innovative open education, scalability of practice and the wide impact of new forms delivery [1], and last, but not least, the globalization of research and practice with consequent regional interdependence. In 2013 in The USA and in Europe too, where expectations are also high, the phenomenon reached new heights, although it was accompanied by a certain apprehension as regards university and higher education. Although it didn't really take off until 2013, a few months before the presentation in June of the "Opening up Education" initiative promoted by the European Commission [2], the European debate has intensified over recent years.

1.2   MOOC in Europe: The European Multiple MOOC Aggregator EMMA

The debate in Europe suggests that MOOCs offer a unique opportunity for organizing and offering a truly European higher education online, a genuinely European identity [2]; moving towards an alternative European MOOC Model and a European model to scalar education. MOOCS are perceived in Europe as a sustainable format of course provision with added value—an increase in institutional visibility and thereby reputation. A MOOC aggregator has been developed by the University of Naples Federico II under a CIP European Program with the partnership of 12 European universities and SMEs. The project is known by the acronym EMMA (European Multiple MOOC Aggregator) and it was funded by EU up until July 2016 [3].

The concept is to provide a transnational MOOC platform in Europe which will allow for the integration of MOOCs with a variety of instructional design, and to broaden access by means of automatic translation systems as recognized by Class Central International Platform Index. It is a Pan-European platform offering hosting services to a variety of instructional design. The guiding principles are: research-based; participatory policy design; agile development; invisible technology; flexibility and strong visual appeal. It combines a simple graphic layout with straightforward functions following a breadcrumbs model. The platform offers a multilingual and cross-cultural approach to learning, providing a battery of features to permit this and ad-hoc tools to measure learner response. It is designed as a European platform for the delivery of European MOOCs. European, in this sense, entails preservation of linguistic diversity and preservation of cultural identity.

2   A MOOC as Support and Parallel Pathway to Traditional Teaching of Projective Geometry

2.1   A Sample in Graphic Education

In creating a MOOC for the discipline of drawing and, in particular, projective geometry, we have considered the strategic importance of online learning and its role in lifelong learning. For this reason, we have included it as part of a University's commitment to Open Education, but we have also used our MOOC as an integral part of traditional degree courses and as an orientation tool for graduate job seekers [2]. MOOCs users, in fact, are often not interested in a certificate which is the reason why even enthusiastic and satisfied participants may be happy to finish in the drop-outs category. The participants on this online course are engineers, architects, engineering and architecture students and teachers of graphic disciplines.

We have created a MOOC as a support and, at the same time, as a parallel pathway to traditional teaching; we have not considered it as a substitute to traditional courses [2]. Thus, we have organized the construction of our project around the following question: What should we do now that the delivery of higher education is so highly digital and we have the internet in our life? MOOCS have forced a new conversation,

and we have to re-examine our assumptions about pedagogy, learning, data and scale. As regards data, which can be considered the research problem, it provided no insight into learner patterns of behavior over time through learning area socialization in MOOCS, through different forms such as local meet ups, is peer-led study groups.

So, what's happening in the MOOCS environment? The internet is extremely important and we have to consider the evolution of interface (e.g. smartphones), smart classrooms and evolving mobile interfaces. Communication is completely different between social structures. In our University, with our Federica Web Learning Study Centre, we ourselves are creating an applications of learning machine.

2.2   Drawing Light

We have worked in particular on the study of creativity and the ability to invent which, in our experience, is fundamental in our university and in our context, and which is especially important in graphic education. EMMA platform tools are available to help the student create their own study path and course book, harvesting material from multiple MOOCs and sources in their own language. A range of data collection tools are available in order to evaluate user responses to the concept [2].

The case study here presented is entitled "Il disegno della luce" and concerns an of projective geometry application employed to ensure the correct representation of the shadows in orthogonal projection and which is available on https://platform.euro-peanmoocs.eucourse_il_disegno_della_luce; design was mainly built on one functionality conversation. Learners can use the tool for a variety of purposes: discussion, presenting tasks, asking questions, reviewing peers' work and so on [3]. Four main pillars are used to construct our experience: learner-centeredness, flexibility, interaction regarding the creation of drawings and digital inclusion. We have also created many self-correction tests and the possibility to give peer feedback on the artifacts and the drawings produced with all relevant elements of the work in the course and contained in an e-portfolio. The learning design has been defined as pedagogical meta-model with technical specification, as a software product composed of two main components: contents and pedagogical design.

The Contents We have created a MOOC which regards an aspect of projective geometry—the presence of shadow on the surface of objects. This is an important element which allows us to recognize forms, and, in this sense, the contribution of the shadows is relevant as far as direct vision is concerned, but it is even more significant as regards the representation of the objects since the presence of the shadows in the drawing gives the images an allusive relief of the third dimension completely absent in the two-dimensional support of the drawing itself. Each effect can be represented with different graphic techniques (from pencil, to pastel, to watercolor, to the use of specialized software) and expressed by employing one or more methods of representation. Here, we will refer to the effects of light that are more directly related to architecture and widely defined as the problem of determining the correct shadows and flows by employing the orthogonal projection method to find a solution.

The Outputs The contribution of the representation of shadow is essential for architectural design, particularly when this is represented using the Monge method. In fact, this method, providing the object with two distinct images, tends to deprive them of the allusive character of the third spatial dimension which characterizes them. Therefore, the application of the shadows on the Monge images of the objects is significant as regards the highlighting of the configurational aspects and the three-dimensional values as it helps to bring the plane representation of the images much closer to the visual ones. The light source is considered as a point at infinity L to which the first and second projections are assigned $(L'_\infty L''_\infty)$, from it we consider the output of a lot of rays of light, or straight lines that have the same direction from the source and which light the represented objects (Fig. 1).

Fig. 1. Scheme of MOOC structure and its construction, with some students' exercises

References

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