GO WITH THE FLOW

Tutorials to support architectural education

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Abstract. The project described here aims to exploit use of information and communications technology, presenting to the undergrad student of Architecture a library of self-study through video tutorials that support the academic content they are couring, with the aim to improve their learning and obtain their grades. The first phase of this research in progress develops and measures use of the library, and records the quality of work in search of impact on efficiency and development of the students.

1. Introduction

The widespread growing and acceptance of Information and Communication Technologies (ICT) among students of all levels is undeniable; today, the variety of broadcasting technology from smartphones, tablets, personal computers, TV, to all kind of electronic media, compete restless for the attention of young people. Conversely, the reading of books and printed material does not show nearly the same acceptance, on literate behavior Mexico ranked thirty-eight on a study of 61 countries (Miller and McKenna, 2016) which in higher education translates to a problem of students highly limiting their learning resources.

This paper addresses alternative ways of learning, complementing traditional forms as classrooms and books. The project works with ICT, and appeals to its popularity (West and Chew, 2014). The student is presented
with a viable and realistic alternative for self-study through a website and a video channel of tutorials to support their academic agenda at the architecture program of the Universidad de Sonora (Mexico). This is a project in progress, the first set published covers monochromatic graphic expression, and we pretend eventually house every knowledge area of the program.

Different studies carried to assess the utility of video tutorials in architectural education have shown that the use of video has a positive impact on learning by providing flexibility and encouraging students to become more active learners (Comiskey and McCartan, 2011, Leijen et al., 2009, Paliokas, 2009). Additionally, the use of video tutorials has been studied extensively in teaching methodologies such as the Flipped Classroom. These studies have documented the learning benefits of video tutorials and the fact that students prefer them to other types of support materials, but also they have identified some of the pitfalls, including the difficulty of finding good quality videos and the need to have videos tailored specifically to the class in question (Herreid and Schiller, 2013). Despite the fact that technology is ubiquitous at current students’ environment, one could assume that the benefits of using technology-based resources such as video-tutorials is a given, however, Lohnes and Kinzer observe that all students are different, and point out the need for mixed-method studies to assess the influence of technology on student education (Lohnes and Kinzer, 2007). Comeskey and McCartan comment, as a downside, the high amount of time consumed on preparing recording, editing and producing all the materials, downside that we faced as well, on doing all the processes and learning to get them in a more efficient manner.

On official policies of education and the use technology, some countries establish clear policies on the use of technology, for example, the Higher Education Funding Council for England justifies its use under expected benefits of technology enhanced learning (HEFCE, 2009):

- Efficiency (existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner)
- Enhancement (improving existing processes and the outcomes)
- Transformation (radical, positive change in existing processes or introducing new processes).

In other countries, like Mexico, the struggle to provide Internet to public schools of every level remains in the present (SEP, 2014). Video tutorials are used to some extent on remote learning for elementary and middle level education at distant areas of the country; with some sporadic programs to provide electronic tablets to all students coursing 5th and 6th grade of elementary education (Notimex, 2014). The work in progress presented in here is developed to support the Architecture degree students at Universidad
de Sonora, however we expect a wider impact since the access to the online video tutorials will not have firewalls. Goals of the project include: a) Encourage self-study by presenting attractive alternatives of e-learning, b) Promote a better understanding of in-classroom classes, c) Rise the grades of students by a better support, and d) Reduce the dropping of studies. Our research focus on working out the better ways to produce such video tutorials while measuring their effectiveness on its application, and the ways to measure all the previous on assets in terms of quantity and quality.

**Methodological Procedures**

Language is an important issue that also drives this project, being based at a Spanish speaking country, public universities accept students with a low English level. At the Universidad of Sonora, English proficiency is evaluated through the admission process, and average students rank the basic score of Toefl test –this score varies some degree from year to year, and from school to school but maintains on lower levels– consequently we had to develop new options in our mother tongue.

The initial research examined about 200 links of video tutorials on both languages, English and Spanish, finding that most good quality material is produced in English, for architecture education very few resources in Spanish were identified: MOOC, and *Profesor de Dibujo* and Luis Tutorials (Avada, 2015, PDD, 2014, Tejeda, 2010). Note that the project does not attempt to promote learning of other languages, nor promotes the reading of printed material: it is designed for students with low level of English, and little love for books, it does attempt to counteract the shortage of tutorials in Spanish, while supports the Program of Architecture regular classes' content.

We faced two main questions, how tutorials will enhance learning? And, how we can measure it? The first question was solved by the didactics, which we established through three main directives: a) Description of means, b) Explanation of technic, and c) exercises applying the technique in architectural items. For the measure of success on learning, we have several means, a) the spread of visualization can be observed through the analytics that the video’s host provides, b) in every video is available a survey to be replied for the students doing the tutorials, c) five years from now we will have people finishing their degrees with this tool available, and we will be able to survey the quality levels of their degree dissertations and compare them to pervious years, d) and also with focus groups we will measure the influence of the tutorials on their work, in order to separate from multiple variables that can influence the student life.

The production of the tutorials was time consuming in all stages of recording audio and video, editing, post-producing and publishing the
videos, nearly 3 years of work, aided by students on social service, and mainly with scarcely economic support.

**Evaluation**

The first three finished tutorials were tested by two focus groups, which responded a survey after doing the tutorials. The survey included questions about the frequency of using tutorials, quality of the instruction, quality of video and duration of the tutorial. Focal Group A (FG-A) consisted of 8 participants: 6 students of middle and advanced level, and 2 newly graduates. Their results were of good quality, but not having a reference on their previous work, showed us that we had to request a previous drawing before watching the tutorials, as we did with Focal Group B (FG-B). FG-B was composed of 13 participants: eleven students of architecture first semester, one of fifth semester and a student basic level of Graphic Design. Some examples are on Table 1, were the improvement of the sketching can be seen.

<table>
<thead>
<tr>
<th>Before watching tutorial</th>
<th>Tutorial</th>
<th>After tutorial</th>
</tr>
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<tbody>
<tr>
<td><img src="image1" alt="Before" /></td>
<td><img src="image2" alt="Tutorial" /></td>
<td><img src="image3" alt="After" /></td>
</tr>
</tbody>
</table>

**TABLE 1. Results of FG-B.**

After complete the tutorial they responded a survey online: The level of detail of the tutorials was considered very to extremely detailed, by 61.9% of respondents; length of the video was considered acceptable by 85.7% of respondents, only 14.3% considered that the duration was short. Regarding
the clarity of the instructor 81% felt that he was clear to extremely clear. Within the quality of images and video, also the majority of respondents (76.2%) thought that the video was clear enough.

There was an observation on some spaces without sound in the video, which caused concern to the student because he could not identify whether it was failing the sound of the tutorial or not. To avoid this soft background music has been included.

**Conclusion**

Today, the site – http://www.dad.uson.mx/tutoriales – includes thirty-four videos about manual graphic expression. The average duration of the videos is five minutes. The next batch to publish will include digital technics. In middle and long term, we plan to extend the video tutorials to other areas of knowledge like design, theory, building and sustainability enable the student “to learn how they want, when they want, and at a pace that suits their needs.”(Wells et al., 2012)

Wider impact of this tutorials will be able to be measured from 3 years from now, when students accessing the site will finish their studies with the analysis of their grade dissertations and surveys at the end of studies.

From our title “Go With the Flow: Tutorials to Support Architectural Education” we assimilate architectural education to a river flow, following a path that has been built by years of water erosion on the land, a flow that most times is predictable and has a clear route to the sea of built environment. The water that feed the river is full of students, which in accordance to their time navigate gladly among social networks and Internet. This river, as many on Earth, has different passages and some times it diverts and splits in two or more flows, for later on joining again in a single flow in order to disembogue at the sea, the sea of their grade of Architects. The video tutorial website is a canal on that river, built with a purpose, provide alternatives of study. Lets construct canals where the students can navigate and supply their ships of knowledge and practice, to return to the main flow again with reinforced creativity and a sincere interest to look beyond the established cannons.

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References


