Amalgamation of multimedia contents in education of electronics

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Abstract- In the presence piece of research we have manifested the amalgamatory aspects of education delivery of digital electronic s circuits and computer structure, of the very first curriculum of computer engineering at the University of Seville. Diverse tools for snapshot and video caging has been implied for the audiovisual material, collaboration in learning currently used at university of Seville. Review on the formulated material was gathered in a survey, demonstrating the interest and utilization found by students in the preparation of theoretical and practical classes with the videos. Successful repercussions has been obtained in the course of evaluation of students. Suggestions for improvement and betterment of the complimentary work to be carried out are further described in the present paper.

Keywords digital electronic circuits, computer structure virtual learning environment, conventional learning

1.   Introduction

The implication of multimedia contents in the educational process of getting significant increase, with enormous universities and schools currently incorporated the diversification of gargantuan video lessons via internet, copious variety of subject [1], [2], [3]. The study conducted on digital electronics circuit can progressively effect from these techniques, complimenting the conventional teaching of electronics, both in the theatrical and the practical ways, with audio-visual support material, beneficial for students in preparation of lectures and practical classes in laboratory. The presence'" on demand" content has to amplify the additional advantages of allowing adjustment of learning needs of each case, contribution for improvement of student motivation and inclination to the world of electronics and microelectronics.

        In addition a number of benefits in the practical case studied the university of Seville can be found such as enabling the preparation of material specifically taken in practise at the department of electronics, technology and the preparation of accessible, on demand content for students with specific limitations.

There are currently the enormous number of applications for the preparation of audio visual material [4][5][6]. The collaborated use of these tools amalgamated into educations by portals [7][8] allows unconventional and innovative teaching possibilities. However there are several facets that

delay there implication in the physical and virtual classrooms, among which it is the emphasized difficulty to find the adequate multimedia content

and to integrate in a simple way these teachings. [9][10].

In the present paper there is implication of particular tools for the preparation of audiovisisual material, uploading the videos in the memorising platform currently in application in seville university, for the formation of audiovisual contents in the curriculum of digital electronic circuits and computer science, the the former most course of computer engineering. The presented content is explicit design for these subjects for the students, inclusive of cs1, cs2andcs2010 computer [11], designed at the university, allowing "on demand" multimedia content for the students.

In the division 2, the choosing of multimedia content and the technical formation of the material is explained. Section 3 is concerned to the evaluation results obtained with the present work, concluding the experience in the formation of multimedia contents and technical preparation of the lecture delivering material and student's perception of the methodology and materials. Section 4 is, summarizing data is presented in vicinity with the detailed and extended work to be performed.

2.   Methods And Articles

2.1 Repertoire of multimedia contents

The further detailed contents and principle were chosen for the preparation of multimedia contents:

- Early lectures of the subject digital electronic circuits.

This particular subject's curriculum was delivered in the very first term. The objective of producing these videos is to provide a prop and referential material for the students that change their matriculation during the academic year, which frequently out-shows in lofty abandonment rates.

  - Certain specific lessons of the subject computer structure.

Support material is especially enthralling for the teaching for the teaching of cs1, cs2, cs2010 computers, which were designed at the department of the electronics technology [11]. It is also enthralling for the professors of microcontrollers where insufficient bibliography is found, in distinct with datasheet, as it is the case of the microcontrolleratmelATEMEGA328P.

- Early lessons of the practical classes in laboratory.
- The objective is to show the correct operation of digital electronic circuits and the laboratory instrumentation, especially in those practical classes with higher difficulty.Adapted contents for students with special drawbacks
- Students with special drawbacks, such as hearing disabilities, could find in the contents prepared a good support for the memorising of electronics.
- Selection contents must be amalgamated in the overall planning of the subject and must be supported the generic competencies to be achieved by the students in the learning of the subject.

2.2 Technical preparation planning

For the formation of audiovisual material for theoretical and experimental classes, different tools been used.

Record my desktop software has been used for the snapshots and audio recording. Record my desktop is a free and open source desktop meant for the purpose of the screen shorting software implementation written for the GUN/Linux. The program is segregated into two facets, a command line tool that is meant for performing the task of capturing and encoding and an interface that is for exposure of the program functionality graphically. There are two front-ends written in python with pyGtk (gtk-record my desktop)

and pyQt4(qt-record my desktop). Record my desktop also proposes the ability to record audio through ALSA, OSSA or the JACK audio server. Record my desktop outcomes to ogv format, using Theora for video and vorbis for audio [6].

BB FlashBack recorder, an another open source software, has been also implied, with the objective of the exteriorising the videos to avi, and facilitate the access to students in microsoft windows operating system.

Theoretical, conceptual and practical classes are evenly planned and plotted for the purpose of recording of the available video cameras at the department of electronic technology, to cover the mentioned contents in section2 a. initial video prototypes have been already recorded.

A subtitle editor, subtitle workshop, for the creation and editing subtitles to be superimposed over, and synchronised and organised with the video is also planned to be used, in order to applied accessibility requirements.

A first practical execution test was carried out with audiovisual article covering contents of the subject digital electronic circuit, delivered and catered on the first term of the first course of computer engineering. The practical execution test very first case took place in one of the groups of the subject, with a total place in 74 matriculated students, who had access to the recorded videos.

The videos were uploaded in the learning platform generally used for students to access the information required to prepare theoretical and experimental classes [11].

The audiovisual material consisted of short snapshort videos (around 5 minutes length), covering the further described selected topics:

- Theoretical lessons for analysing of combination and sequential circuits.
- Theoretical lessons of design of combination and sequential circuits.
- Resolution of problems presented in the subject.

The format and layout used for this first practical execution test case was ogv (recorded with record my desktop). Certain links to ogv(record my desktop). Some links to ogv players were also kept for the provision to students in the web page, in order to aid the students for the copying of the videos.

The audiovisual articles were distributed together with a short survey, with the objective to collect students feedback on the prepared material and provide open suggestions for the improvement of the work. The proposal of the questions are further detailed.

- Do you have the perception that it is useful to have multimedia content for the preparation of this subject?
- What were the theoretical or experimental lessons which you find was enthralling to prepare the support of the audiovisual content?
- What feedback did you have for the first demo video that has been prepared? On basis do you find it could be improved?
- In what manner would you like to access to these multimedia content?(through website of the subject/ other portals)
- In which format you will like to see the videos?

Differentially abled and students with the special need were personally interviewed, to have a more detailed information about their assessment.

3. Results

3.1 Outcomes of the survey conducted

Total 11 interview session were conducted among the group of students. Outcomes of the survey were concluded in the following points.

- Utility of articles

All the surveys which were conducted indicated the utility found by the students in the audiovisual material to prepare the subject. In one of the documentation the recommendation was found to include different topics to those seen in classes.

- Contents proffer.

Students expressed their grievances between theoretical, problems and laboratory classes.

Special accentuation was put on the contents they regarded as complicated to understand or important in the overall qualification of the student, as could be expected.

- Manifestation video.

All of the questionnaires presented a positive enthusiast of the audiovisual material. Minor specific problems were found in the rarity and quintessentially of the sound or in the low speed of explanations. A vivid understanding of the topic was expressed. The utility of the specific articles for the formation of the subject was also generally commented in this question

- Availability to multimedia content.

A vivid preference towards uploading the multimedia content in the web page of the subject was expressed. Students managed to find this way of accessing the information easier and more formulated than through the webCT virtual platform [7].

- Outlet of the videos.

A diverse variety of formats were recommended. Special interest was expressed in the windows compatible formats. A considerable number of questionnaires showed no preferences in the blueprint of the videos.

Students with special needs and deferentially abled expressed their interest to have accessible multimedia content, with appropriate subtitles. This consized group of students found the article of particular importance not only in the exteriorisation of theory, but also in the formation of laboratory practices, specially in those cases where documentation was difficult to find, as in CS1, CS2 and CS2010 computers.

B.Academic Repercussions

Of special interest was found to be the outcomes of the final exam, where students had to respond to diverse questions in relations with the concepts seen on videos, with very good results. In the following table the results of the test conducted can be observed and analysed, in comparison with the results obtained in the previous academic year.

Academic Year	% presented student	%pass over presented
2010-11	38,2%	44,9%
2011-12	49,2%	62,9%

Inventory 1: academic results.

The implication of the videos and the good acceptance found among students, according to the survey, could be influencing the betterment on the number of the approved students. However, it is necessary to

consistently evaluate the method in other subjects, as in the current tests being conducted in computer science, and also in forthcoming academic years.

4.   Conclusions and future work

In this present piece of research there is amalgamation of the multimedia content in the teaching of the Digitalelectronic circuit and computer structure, of the first curriculum of computer engineering at the university of Seville. Record my desktop was used to prepare the very first audiovisual contents, which were shared in the web portal for the teaching of the subject digital electronic circuits.

Students' feedback on the prepared articles was gathered in a survey, showing the interest and the importance found by the students in the formation of theoretical and the experimental classes with the videos. A special accentuation was placed on contents they regarded as difficult and complicated to understand or important in overall qualification of the subject, and suggestions were made in relation with technical issues such as the outlooks of the videos. Results of the final exam show lofty and gargantuan repercussions on the specific questions where videos were prepared.

Work which is to be conducted in future will be centred on the preparations of multimedia contents for the teaching of the subject of computer structure, exteriorisation on the second term of the first course of computer engineering. The architecture and the plan of the operation of the computers CS1, CS2 and CS2010 will be displayed and the specific material will be prepared converting both reticle and practical classes. Accessibility needs the gathered data and the work will be taken into account in order to improve the learning of Electronics by student wins special limitations and drawback

5.   Acknowledgment

6.   References

1.   MIT open course ware Stanford university. Stanford online Universitatpolitécnica de Valencia Real player

2.   Camtasia studio Record my desktop WebCT Moodles Multimedia online recursodocente y su integration en VLEX. Basogain, M. Olabe, grupo multimedia – EHU.

3.   Llasma- nistal, m ; caeiro-Rodriguez, m.; Castro, M,; " use of E-learning functionalities and standards; the Spanish case," education, ieee translations, on vol.54, no.4 pp540-549, Nov. 2011ll

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