Combining traditional methodologies and social networks to teach job related skills to students with special needs

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***Abstract* — Information and Communication Technologies offer more possibilities both for students with special needs and teachers who work with them. In recent years, research has been done about the possible applications and benefits of the use of social networks by people with disabilities, obtaining promising results. However, when reviewing the literature we observe that some professionals do not see social networks as suitable tools for this collective. In this paper, we present a learning experience in which a traditional methodology such as cooperative learning is combined with ClipIt, a social video-based learning platform. This work shows that the combination of traditional methodologies and new technologies is beneficial for students with special needs, enhancing both their motivation and their learning process.**

Keywords: cognitive disabilities, cooperative learning, colaborative learning, social learning networks..

I. INTRODUCTION

In the last 10 years there has been an increasing interest in cooperative learning within the educational environment. This is partly due to the positive impact this methodology has had in the academic results [1], the social behavior [2] and the social and educational inclusion of students with special needs [3][4]. The creation of groups which will have to achieve cooperative goals and overcome common contingencies offers great tools for this methodology to become beneficial for students with disabilities [5].

However, in spite of the benefits this methodology offers, some teachers still do not fully exploit it, partly due to the difficulty to control the communication channels and the amount of effort required to apply it [6]. Literature discuss that this lack of use derives from the limited knowledge of teachers about how to properly use cooperative learning in their classrooms. In his work, Gillies [7] observed that the students performed their tasks better in the schools where there were teachers trained in the implementation and use of cooperative methodologies. This is why many researchers in the literature highlight the importance of teachers to understand how to integrate this kind of learning in their classrooms in order to improve communication, commitment and cooperative research of the students [8].

In this sense, Information and Communication Technologies (TIC) can play an important role in the design of student-centered learning environments. The use of TICs will let teachers to improve the implantation of cooperative learning models [9], since they ease the access to many educational resources and help to look at the information from multiple angles, helping teachers to transform complex processes to simple simulations. However, most of the educational institutions only use Learning Management Systems (LMS) which do not exploit all the potential of technology to create global learning networks, to enhance the collaboration or to establish social networks [10] [11].

Compared to the traditional LMS, social network platforms place the control of the learning process in the hands of the students [12]. Cooperative learning aims to teach the students skills related to coordination, creative thinking, problem solving skills, and to integrate new ways of communication and interaction among the members of the group, skills that could be enhanced and controlled through social networks. Definitely, we can use social networks in learning environments to: i) improve face to face collaboration [13]; ii) improve long distance courses [14]; iii) improve permanent learning; iv) promote social interaction among the students [15]; v) facilitate support to the students [16] and to vi) offer new ways for the students to get involved in interactive dialogues. All this factors can help the students to improve their learning [17].

We can find in the literature several examples of the use of social networks in education. For example, in Silius et al. [18] work, they developed a social network to improve collaborative learning and social interaction. His research revealed that the use of this tool motivated the students and encouraged them to participate in the learning process. In other similar studies, researchers developed a social marker tool [19], a blog [20] and a wiki [21], showing that it is interesting to adopt social nertworks in the educational environment since they promote collective knowledge and encourage the users to participate.

In this paper, we present an educational experience performed within the Promentor Program of Universidad

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Autónoma de Madrid. In this study, students with cognitive disabilities have used cooperative learning methodologies to design an educational video of a job related situation. Afterwards, they have used Clipit as a fundamental pillar for video based learning, platform which lets the students to share their videos to finally conduct a peer review process.

II. Social Networks and Special Needs

With the main goal of taking advantage of the benefits of social networks, Blanco et al. [22] confirmed the importance of differencing the users according to their profiles. Therefore they highlighted the relevance of facing the design and the development of a social network from different points of view, addressing concepts such as relational groups, relational needs and network space.

Although we can find in the literature several studies related to social networks or information sharing among people with special needs [22], little is known about the impact of this kind of software when using it to teach job related skills or capabilities related to the work environment. Some authors believe that this happens because of teachers not being prepared enough to satisfy these students' needs, partly due to their lack of training in these technologies.

Shpigelman and Gild [24] thoroughly analyzed the literature related to SNs and disability, identifying as the main challenges the skill deficiency derived from text-based communication, which affects both accessibility for people with visual disabilities and intelligibility for people with communication disorders. Moreover, regardless of SN's potential benefits and due to its challenges, Tonkin and Tonkin [25] pointed out that different professionals who are working with people with disabilities are not too much in favor of recommending the most popular SNs to their patients.

In Nunes et al. [26] work, they designed a social network through the NING platform to facilitate information and training about multiple disabilities. In the experience 15 parents, 30 teachers and 66 students participated in the use of this social network. They observed that there were different levels of participation in the use of their social network. For instance, teachers' participation was more effective than the parents' commitment. The software designed answered to teachers' needs which were getting access to pedagogical information and training in assisted technologies and multiple disabilities.

Social networks are, in summary, flexible tools that allow creating learning environments to enhance the acquisition of knowledge of students with special needs and the development of social and work skills. Researchers agree that social networks have become new systems for informal learning [27].

III. ClipIt

ClipIt is a web platform whose main characteristic is supporting the students' learning throughout the creation of educational videos, online discussions and peer review evaluations between equals. When an activity is designed in ClipIt, the teacher has to define a tricky topic on which students will work and the associated subconcepts or stumbling blocks. Nowadays, with ClipIt the students go throughout three learning phases: i) participatory production, where the students add materials to the platform and to their group; ii) discussion, where the students of the same group discuss about the content provided; and iii) peer review, where the students from other workgroups evaluate the content created in the activity.

ClipIt provide group working tools such as discussion forums, a shared storage of documents, audio, images and videos, and access to the content provided by the teacher. Unfinished videos can be commented by the different members of the same group in order to provide their opinions about how to correct or improve the final version. This phase corresponds to the participatory production phase, where the students work internally within the group.

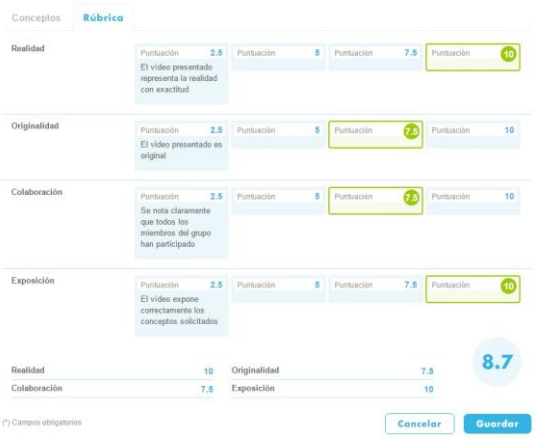

Fig. 1. Evaluation through an evaluation rubric

Once the students have designed, recorded and uploaded the final version of their video, they can publish it to make it visible for the rest of the students who are included in the created activity. At this moment, the students can give feedback about the videos presented by other workgroups with constructive comments and scores based in an evaluation rubric defined by the teacher (see an example of evaluation rubric defined in Fig. 1). Both the rubric evaluation and the comments of the students are based in the tricky topic and the stumbling blocks associated to it offering a simple guide to review the videos. This way the students can make comments which will be useful for the authors of the video. The group which has created the video receives detailed information about the criteria included in the rubric and about how they have explained and covered the concepts worked in the videos.

Those videos which accurately represents the concepts requested, have good quality and have the teacher's approval can be published outside the activity, which will make the video available to other people, increasing the knowledge dissemination. This process of sharing the results of the created videos to the educational community has to be done be the teacher in charge of the activity.

IV. Learning Experience

The goal of this experience was on one hand, to observe if users with special needs were able to interact with ClipIt and if

this social network was accessible and intuitive enough. On the other hand, we wanted to measure if there was meaningful learning among the students.

The next sections show the participants' profile, the methodology used in this study and the measure instruments.

A. Participants

The experience involved 15 students (8 men and 7 women) from 17 to 25 years old with cognitive disabilities. These students were enrolled in the first course of the labor inclusion program of Fundación Prodis at Universidad Autónoma de Madrid. The main objective of this foundation is to help students with disabilities in acquiring job related skills. In addition, some of the participants presented reading problems either due to their cognitive disabilities or their visual problems. The purpose of the course was to provide the students with job related skills so they could be included in the labor market. Specifically, this experience was framed within the subject "bases for learning I" where the students work collaboration and communication skills.

Before starting the experience, the students were organized by the pedagogical team in groups of three or four people. To form the groups, we performed a prior knowledge test which had seven multiple choice questions, which allowed us to group students with more knowledge with those less skilled. In Table 1 we show the participants' test results and how they were grouped. As it is shown, workgroups are heterogeneous owing to participants with different levels are working together.

Table 1. Working groups

Id	Correct answers	Group
P1	3	G1
P2	7	
P3	7	
P4	4	
P5	4	G2
P6	3	
P7	7	
P8	6	
P9	5	G3
P10	4	
P11	7	
P12	6	G4
P13	5	
P14	6	
P15	4	

B. Methodology

In this learning experience the students had to work concepts about work environment. To do that, the pedagogical team decided several fundamental concepts that students will work with. These concepts were: task performance, task understanding, task management, initiative, collaboration, communication and respect. Afterwards, each group was assigned a work scenario they will have to represent through a video, solving all the issues presented in that scenario (For instance, how to attend the phone).

In order to let the participants upload and work with their videos in ClipIt, we created and activity whose first task was to upload the designed video, a second task where they have to peer review their partners' videos and a last task which will be the post-test to measure the knowledge acquisition. Fig. 2 shows the task list of this learning experience. Once the videos were created, the participants had to access Clipit and upload the video in the corresponding task so everyone within the activity had access to that video to evaluate or comment it.

Fig. 2. Activity and tasks

The study was carried out in nine sessions of two hours over two months (1 session per week) in which the participants were asked to follow several steps so they could at the end record a video about the proposed job related situations. After forming the groups, we did a little presentation where we explained the final goal of this experience, which was creating an educational video representing a job related situation that each group will have to solve. Each group had their own specific situation: a) taking phone notes while alone at work, b) receiving mail and distributing it along the departments, c) take orders from the department, retrieve the materials from the store and distribute them to the departments and d) review that the computer equipment is working correctly and substitute it if it is not. The structures of the sessions were as following:

- Session 1: In this session we taught, the participants how to record videos with an iPad. Each group had to present each of its members and the job situation they had been assigned with. Afterwards, the participants commented each other videos in order to find mistakes.
- Session 2: In this session, each group had to answer each of the questions asked in their assignments. By doing this, they got several hints which helped them into designing the script of the video they will have to record.
- Session 3 and session 4: During these sessions, the participants worked in their video scripts. In session 4, all the groups started to rehearse their scripts in order to

be prepared for the session in which they will record the video.

- Session 5 and session 6: The participants recorded the videos with iPads. Due to the limited space they had, the classroom, only one group could record at a time. In session 5, groups 1 and 2 recorded their videos, and group 3 and group 4 did it during session 6.
- Session 7 and session 8: The groups had to use the iPads for interacting with ClipIt. Firstly, they had to upload the videos created to the platform. Afterwards, each participant had to evaluate the video uploaded by the rest of groups and commented providing suggestions to improve the video. Once they completed the peer review process, each participant had to perform a test in order to measure if there was any knowledge gain during the study.
- Session 9: In the last session, we performed a focus group in which all the participants commented their opinions about the study itself and what aspects could be improved.

C. *Measure instruments*

As aforementioned, the participants performed a test so we could gather information about their initial knowledge about the concepts they will work with. The results of this test allowed us to form groups as homogeneous as possible. This initial test was formed by seven questions with three possible answers and each of the questions referenced each of the concepts mentioned in the previous section. At the end of the learning experience the participants had to perform another test with seven questions which allowed us to measure if there was any meaningful learning. Both tests were designed by the pedagogical team of the Promentor program. They decided that the tests will have seven questions since they did not want the students to lose their focus.

Moreover, along the sessions we used direct observation techniques to take notes about any issues that may arise during the learning experience and any problems that the participants may encounter while using ClipIt.

V. EVALUATION

After ending the learning experience we gathered and analyzed all the information taken from direct observation and the tests performed by the participants. One of the participants was unavailable during the last test, so we will only analyze the results of the other 14 participants

Along the sessions we did not appreciate any kind of issue in any of the groups. All the participants collaborated when designing the script of the video and if any of them had any trouble, their partners helped them to continue the tasks. This was partly due to the groups being well composed by the pedagogical team. We did not find any situation where frustration took control of any of the participants.

Fig. 3 and Fig. 4 show the results obtained by all the participants in the initial evaluation test and the final evaluation test. In both figures, the horizontal axis represents the number of correct answers in the test, while the vertical axis represents the number of students which obtained that score.

Comparing both figures we can observe how the number of correct answers grows considerably in the final evaluation test. Numerically speaking, the median of the initial test is 5 while the median of the final test is 6. In order to confirm if this is meaningful, we have first to check the normality of the data. Analyzing this data with the Shapiro-Wilk test, we get that the distribution of the data in the final test does not adjust to a normal distribution ($p = 0.006$), which is confirmed by the Kolgómorov-Smirnov test ($p = 0.05$). Therefore, we decided to transform this distribution into a normal one so. After this step we checked both distributions with T of Student test, obtaining that $p < 0.01$. This result makes us conclude that there was meaningful learning among the participants about the concepts of a job related scenario.

Fig. 3. Initial evaluation test results

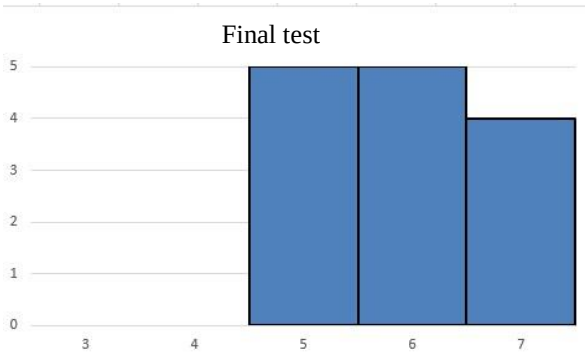

Fig. 4. Final evaluation test results

Along all the learning experience we observed that the students were motivated and focused in the development of the proposed tasks. These beliefs were confirmed by the participants in the focus group, where they showed their satisfaction about the experience and they expressed their interest in using this methodology again.

VI. CONCLUSSIONS

This contribution has presented a learning experience where new technologies, particularly social networks, are combined with active learning methodologies such as cooperative and collaborative learning to obtain great results. This combination eases a smooth transition from the traditional

way of teaching concepts to the use of new technologies which are being step by step included into the classroom.

In our study, the use of a social network which let the students to share their creations has facilitated a better comprehension of the tasks they had to perform. This factor has derived in an improvement of the learning process. However, due to the low number of participants of this learning experience, it is necessary to do further studies with more students to confirm where social networks are suitable for teaching students with multiple disabilities.

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