Web 2.0 Learning Strategies for Disabled Students

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Abstract

Via the present study, it was attempted to explore which of the widely used Web 2.0 tools (blogs, wikis, social networks and typical hypermedia) and which of several pedagogical techniques (lip – reading, video – sign language and learning activities) are appropriate to use for learning purpose for deaf and hard of hearing people. The methodology that was followed consisted of the creation of a community of learning in order for subjects such as e- commerce, dyscalculia and International Accounting Standards to be studied with the involvement of four countries (Greece, Cyprus, Italy, England). As data collection tool, appropriate questionnaires were used both before the launch and after the completion of the seminars in order for us to monitor the progress of hearing impaired learners' cognitive state and skills and to check the extent in which the tools   mentioned

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above were compatible with the features of the specific group and able to maximize the learning results. The study was conducted in the context of SYNERGIA (moodle.imm.demokritos.gr/synergia), a project of Leonardo da Vinci of Lifelong Learning Programme.

Keywords: empirical study, Web 2.0, e-learning, social networking, wikis, blogs, video – sign language, lip – reading.

1   Introduction

Around 90's web (Web 1.0) appeared as a store-house of information and as means of access to static content. However, in just a few years the content turned into dynamic and the user was then able to receive results. The philosophy of the new Web 2.0 aims not only to high quality communication but also to accomplishing cooperation and networking among users' community. Education has also been affected by this evolution and from chat and forums new technological tools have come up, tools that seemed to enhance collaborative and cooperative learning. Especially in cases like the studied one, where the aim is adult learning, a task known to mainly be based on group working, internet tools could be the solution that provides users with opportunities of easy networking and collaborating.

Nowadays, with the abundance of new technological tools, virtual communities of practice and virtual learning communities keep getting more and more popular in higher education [1]- [4]. To be more specific, current computer systems provide the user with a combination of synchronous and asynchronous communication for access from and to geographically dispersed communities as well as for exchange of information in world scale [5]. Additionally, those tools constitute a powerful aid to "learning by doing" and to "addressing real problems"

and that is a proof that new technologies and the famous Situated Learning theory are more than compatible.

Indeed, especially during the last decade numerous applications of WEB 2.0 tools in education have been listed in relevant literature and the results were in most cases impressive. Important research has been conducted on the use of weblogs in education and very interesting results have come up especially when it comes to the use of this tool as a digital diary [6]-[8]. A research, sought in University of Minho, Portugal, investigated the application of blogs as flexible educational tools that not only enhance learning process but also develop important social skills [9].   The participants in this project were 23 undergraduate students who enrolled to an Educational and Communication Technology (ECT) class. They were separated in small groups and were asked to keep a blog during the semester in order to have access to a common portfolio of the group work. The project may be considered successful as at the end of the semester the participants thought of weblogs as powerful educational and communication tools that promote cooperative learning and stated that the weblog experience helped them obtain a deeper understanding of the course subject.

Wikis also have been widely introduced in education. For example, it was attempted to analyze the use of wikis in online learning classes, the first in the context of a symbolic logic class and the latter as a collaborative environment in several online classes [10], [11]. Another study, after the implementation of wiki technology in the context of statistics classroom at the University of Haifa, proposes the wiki - based version of every collaborative discipline as from the studies conducted so far very encouraging results have come up [12]. Finally, wiki use was introduced in two English Literature classes with common professor [13]. The first class made use of a wiki-based tool called CoWeb in order to perform the learning tasks while the second one used an online environment similar to Usenet for the same purpose. In this case the results were statistically significant and showed that in all aspects, first class had a better performance compared to the

latter one.

It's a common remark that deaf and hard of hearing people are a group that has very limited access in information and learning in the Internet. Thus, it is quite challenging for the research community of the specific field to determine efficient ways of familiarizing in a smooth way the specific group with new technologies and even better to give them the possibility to incorporate those tools in their learning and professional activities.

2   Main Results

The program was realized in 2007 – 2010 and four countries – partners (Greece, Cyprus, Italy, England) were involved. Several formal features are listed below:

Year of realization of the training program: 2007 – 2010

Place of realization: Greece, Cyprus, Italy, England

Program Title: SYNERGIA (moodle.imm.demokritos.gr/synergia/index.php)

Technology used: LMS Moodle

Tools and Services: Blogs, Wikis, social networking tool Ning.com, Hypermedia

The learners' participation and interaction model: In this community Hybrid Learning was set as the participation model, as both synchronous (in the beginning, aiming at students' familiarization with the environment used) and asynchronous instruction took place.

Target group: 10 – 20 learners from every involved country, chosen by the partners of the project in cooperation with unions of hearing impaired people.

The learning system, which consists of the educational scenario, the learning material and the used technological solutions, was tailored to the special needs of deaf and hard of hearing people of every country – partner.

The most important targets of the specific project were the following:

1. The expansion of the employment horizon of the hearing impaired people,

2. The familiarization of impaired people with Internet and digital education,

3. The promotion of equal access in the initiative and continuous training of impaired people, who have limited access,

4. The empowerment of vocational training policies, especially for the unemployed deaf and hard of hearing people, for their lifelong training in the fields of e-business, e-commerce, and economy, via innovative e-learning content.

2.1 Process/Methodological approach

2.1.1 Actions/Methods of instruction and learning process

In the first phase of the program, the material was studied and the learners' prior experience and tacit knowledge was explored while the second one was mainly about finding appropriate resources and extracting from them the educational material. In addition, in the second phase of the program learning groups were formed and different activities were assigned to each individual group.

To be more specific, for each learning group, a virtual space for group learning activities and members' cooperation was created and for each participant, the creation of a personal profile and a personal blog was made possible through social networking software. Thus, the learner could upload photos or information that he / she considered important and the individuality of the participant was empowered.

2.1.2 Assessment (assessment criteria)

Two assessment criteria were taken into consideration. Firstly, the extent in which e–learning proved to be useful for the participants of the project and secondly, whether they would be able to integrate e – commerce in their professional life or not.

2.1.3 Sample Description

The sample in this study consisted of 45 hearing impaired individuals, who participated in the courses offered in the context of SYNERGIA (moodle.imm.demokritos.gr/synergia/index.php). Demographic data concerning the learners are in our possession. The participants' ages range between 30 and 50 years old, mainly with high school education.

2.2 Data collection tool

Data collection for this survey took place via questionnaires, consisted of closed type questions. The questionnaires were designed in increasing Likert scale (not at all, a little, enough) so that the respondents would specify their level of agreement to the statements of the study.

2.2.1 Assessment (assessment criteria)

AGE: 20 – 30, OVER 30,

SEX: MALE, FEMALE,

EDUCATION: HIGH SCHOOL, UNIVERSITY,

DEAFNESS: DEAF BY BIRTH, HARD OF HEARING BY BIRTH,

LANGUAGE: NATIVE, SIGN,

ENGLISH: YES, NO.

With the use of questionnaires before the launch of the program, we developed the learning material that was most appropriate for the familiarization of the specific sample with the three subjects to teach, always taking into consideration its needs and features. So, the final material was in the following form:

E – commerce: Use of video – sign language, multimedia, hypertext, images and tailoring of the text to the specific needs of the target group,

Dyscalculia: Use of video that focuses on lip – reading with appropriate text language,

International Accounting Standards: Use of text supported by hyperlinks with appropriate text language.

After the completion of the program, the participants were asked to answer the following questions:

1. Do you think that lip – reading which was used in the context of the course concerning dyscalculia has been a useful method?
2. Do you think that wikis are useful as a tool in the context of a course?
3. Based on your experience via SYNERGIA, do you think that wikis are easy to use?
4. Do you think that blogs are useful as a tool in the context of a course?
5. Based on your experience via SYNERGIA, do you think that blogs are easy to use?
6. Do you think that text with no sign language but supported by hypermedia was efficient?
7. Based on your experience via SYNERGIA, do you think that video – sign language was useful?
8. Do you think that the activities set up in the context of e – commerce course were helpful?
9. Would you say that the enrolment and navigation process in our social networking tool was easy?

10. Do you think that social networking helped in acquiring team spirit?

3   Questionnaire analysis

Many important conclusions can be drawn after thoroughly studying the answers extracted from the filled out questionnaires. Consequently, it is important that we provide a presentation of the results with the help of the respective diagrams (see in figures).

From the answers to the question concerning lip – reading, it is more than obvious that in general, the participants consider the specific method a very valuable one. Indeed, the great majority (80%) of the hearing impaired people that took part in this study claimed that lip – reading proved very helpful in facilitating the learning process in the context of the course concerning dyscalculia.
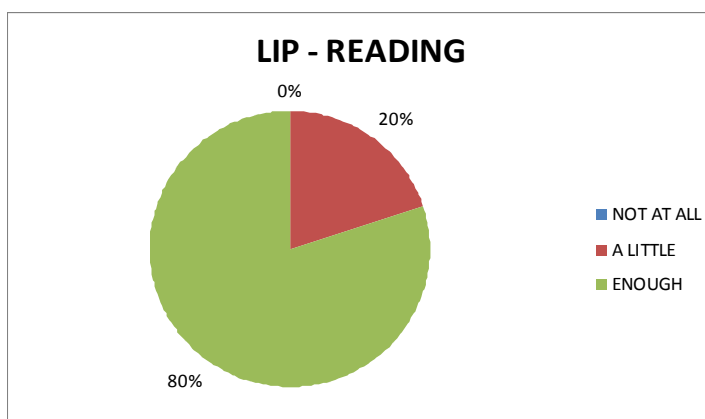
Figure 1: Lip - reading

According to the following question, which meant to determine the usefulness of wikis in the context of a course, only a few learners in this study (7%) consider the specific WEB 2.0 technology a much helpful tool in learning and working after using it for their participation in the course introducing e-commerce.
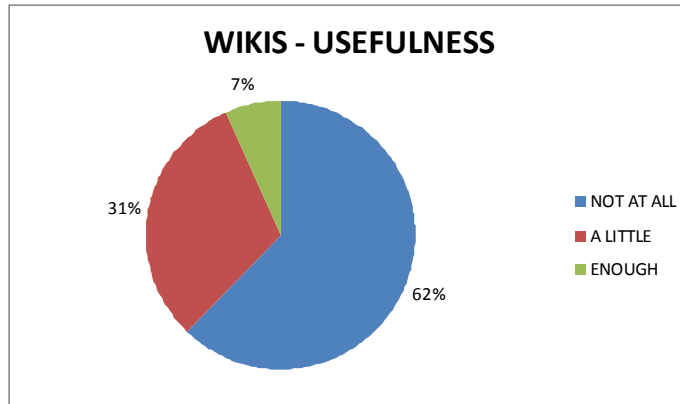
Figure 2: Usefulness of wikis

In addition, based on their experience via SYNERGIA and on their participation in the wiki – based course of e – commerce, most of the participants (75%) came to the impressive conclusion that wikis are not at all easy to handle.
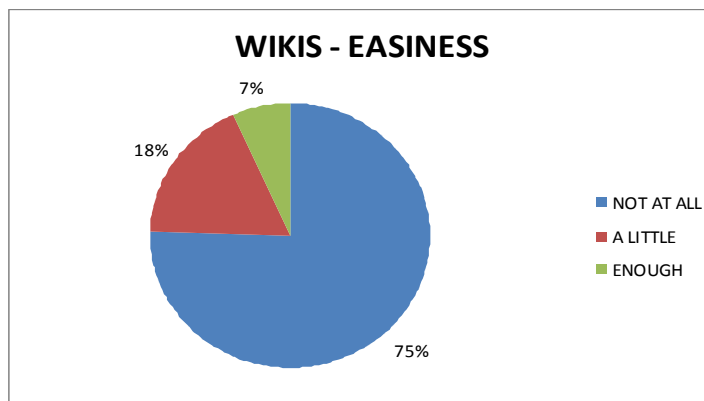

Figure 3: Easiness of wikis

The question that follows examines in what extent the blogs are considered useful by our sample. Here, exactly as happened in the respective question concerning wikis, only a small fraction of the participants (7%) shares the opinion that blogs could be useful in a satisfactory level.
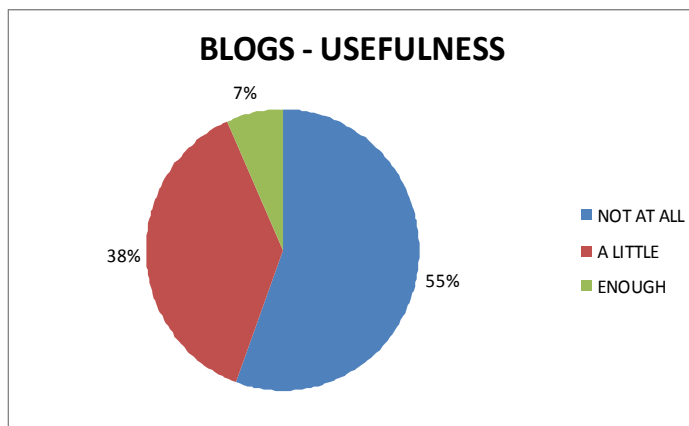
Figure 4: Usefulness of blogs

As it is probably expected, conclusions drawn from the respondents' answers to the question concerning the easiness of use of blogs for learning activities are similar to those concerning wiki use. Indeed, most of the participants (93%) in SYNERGIA believe that blogs also were a little or not at all easy to use in order to achieve the learning goal of the program.
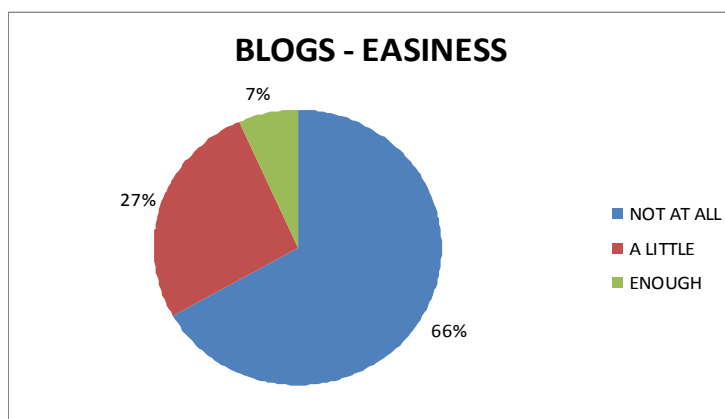

Figure 5: Easiness of blogs

A much important question is the following one which aimed at exploring whether plain text with no sign language but supported by hypermedia is a fruitful

way for hearing impaired people to absorb learning material or not. Only a small percentage of the participants (4%) claimed that plain text supported by hyperlinks, a method that was used in two courses (e – commerce and International Account Standards), was a considerable help in learning process.
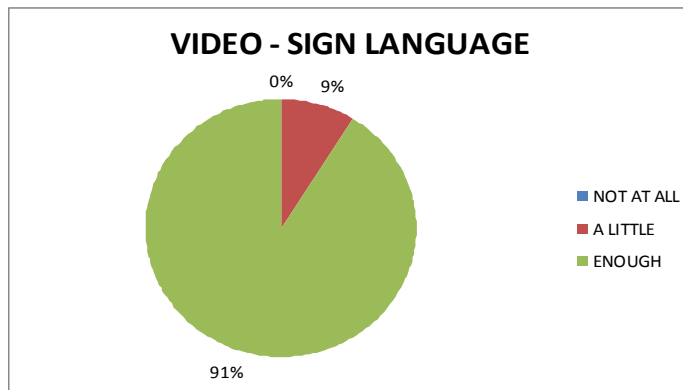

Figure 6: Popularity of text with hypermedia

Via the following question, respondents, based on the acquired experience in the context of the course introducing e – commerce, showed almost unanimous preference in video – sign language. Indeed, the great majority (91%) of the students was very positive towards video sign language as they consider that it has been a much valuable help for the understanding of the learning material.
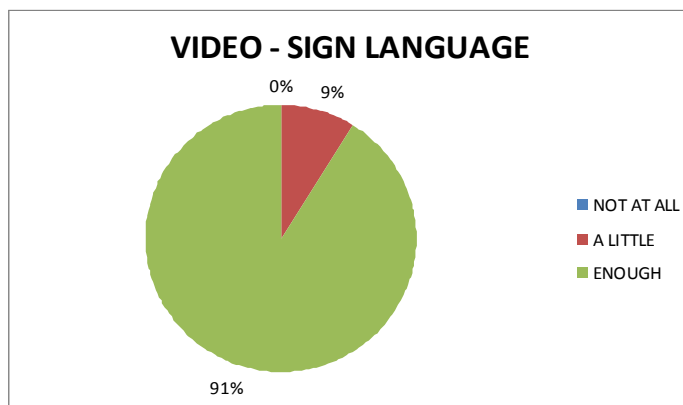

Figure 7: Effectiveness of video – sign language

Activities set up in the context of the course introducing e – commerce proved to be an important ally in acquiring knowledge and developing skills via learning material. To be more specific, most of the participants (71%) shared the opinion that the activities taken over during the project SYNERGIA were an efficient way to enhance their learning performance.

ACTIVITIES

0%
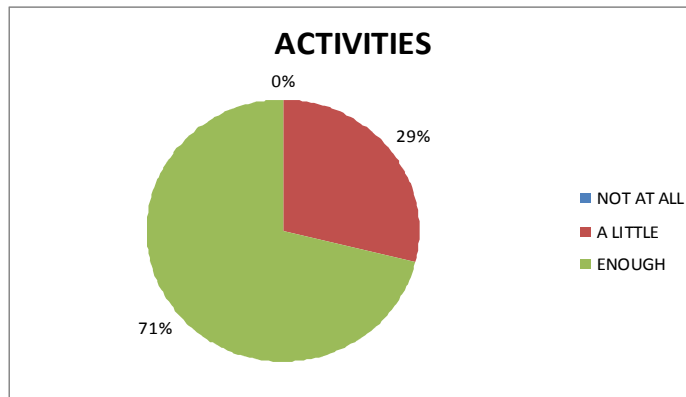29%
71%

- NOT AT ALL
- A LITTLE
- ENOUGH

Figure 8: Activities for enhancement of learning performance

The answers to the question exploring whether the enrolment and navigation process in the social networking tool was easy or not, made it clear that our sample handled the specific tool significantly more easily compared to wikis and blogs. In fact, more than half of the respondents (55%) claimed through the

SOCIAL NETWORKING - EASINESS

16%
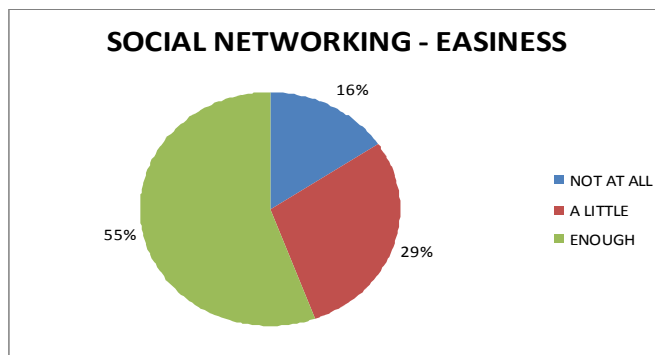29%
55%

- NOT AT ALL
- A LITTLE
- ENOUGH

Figure 9: Easiness of use of the social networking tool

questionnaire that handling the social networking tool was simple enough for them to use without serious problems coming up.

Finally, in the last question that examines the extent in which the social networking tool that we used in project SYNERGIA managed to promote a healthy team spirit among the participants, a large percentage of the participants (78%) answered that Ning.com helped them bond as a team and consequently promoted cooperative learning.
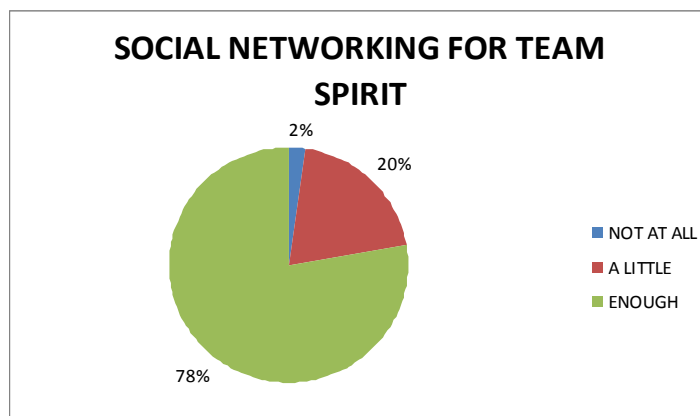

Figure 10: Social networking tool for empowerment of team spirit

Consequently, based on the filled out questionnaire one can easily conclude that deaf or hard of hearing people tend to be really positive when it comes to using lip – reading as it is a method that provides them a natural way to communicate and learn. Additionally, video – sign language is almost unanimously considered a very efficient method for facilitating absorbance of learning material and activities taken over by the learners in the context of a course seem to be a fruitful way to maximize learning results.. However, commonly popular WEB 2.0 tools such as blogs and wikis as well as typical internet tools such as hypermedia do not seem to help them in the learning process and in general they find them non practical in their use.   Finally, in spite the fact that in several cases social networking has proved uneasy to handle, it finally

earned a large percentage of the sample due to its usefulness in empowering team spirit.

5   Conclusion

The empirical study that was conducted in the context of SYNERGIA, a project of Leonardo da Vinci of Lifelong Learning Programme, was presented in this paper in order for a general stream of hearing impaired people's preferences for specific technologies and learning strategies to be expressed and diagnosed. Indeed, via this study it gets quite obvious that wikis, blogs as well as hypermedia do not facilitate the participants learning and professional activities in a considerable extent while lip – reading and video – sign language seem to be very fruitful ways of communication and exchange of information. The important conclusions that were drawn from this program could be the starting point for further determination of efficient methods to promote the physically impaired individuals' digital education as well as to expand their professional activities in numerous innovative fields. However, in order for the research community to be able to achieve promotion of equal access of deaf and hard of hearing people in educational and professional activities in a larger extent, further relevant surveys must be sought making use of not only a larger sample but also of a wider range of innovative technologies and of topics for the courses.

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